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## ORIGINAL LECTURES.

CLINICAL LECTURE

### ON THE TREATMENT OF CLUB-FOOT.

*Delivered at Bellevue Hospital.*

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GENTLEMEN: I fear that you will think we are never going to quit the subject of club-foot, as I have already several times had occasion to lecture to you upon this matter within the past few weeks. More cases, however, continue to present themselves for treatment, and as the deformity is one which you will be called upon to remedy more frequently than almost any other, when you begin practice, I have thought we could profitably devote another hour to its consideration.

Club-foot is of such common occurrence, and, strange to say, its treatment so little understood or practised, that I can confidently assure you, if you will but follow the instruction which I give you for its treatment, you will be able to cure a very large proportion of the cases which are brought to you, thus reflecting great credit upon yourselves as practitioners, and will rarely have occasion to send your patients to so-called specialists. Patients are constantly being sent to me for treatment from all parts of the country, from the South, East, and West, and for the simple reason that the principles of treatment of these cases are not understood. For ten years I have been trying to inculcate these principles into the minds of physicians, but they have not yet received that general adoption by the profession which I believe they merit. So soon as they do, any one of you, or any other medical man, can relieve deformities of this kind as well as I can. There is no mystery in the treatment, and nothing about it but what you can do as well as any one else; there is no specialism in it.

*Talipes Equino-varus.*—This young lady is seventeen years old, and presents with a very bad case of talipes equino-varus upon the right side. You will observe that the cuboid bone is subluxated so as to form a projection. With the increasing weight of the patient, the contraction of the tendo-Achillis, and the shortening of the arch of the foot by the contraction of the tibialis anticus, the deformity has been gradually getting worse, so that she now walks upon the outer border of her little toe. Walking upon the foot in this abnormal position gives the patient great pain. She states that this deformity has existed all her life. Her case is a good illustration of the importance of following the advice which I gave some years ago, namely, that the proper time to attend to deformities of this kind is immediately after the birth of the child. As soon as you have given the mother the necessary attention after the birth of the child, and before you leave the house, you should always examine the child and see if there be any deformity present. If so, you will, by thus early beginning treatment, be able, in the great majority of cases, to restore the distorted member to its normal position, so that by the time the child is old enough to walk, the foot will be in proper position to receive the weight of the body, which in itself will tend to prevent the return of the deformity.

Suppose, for instance, you find a child at birth with talipes equino-varus. Ordinarily, such cases are of paralytic origin, or there may be a spasm of the muscles producing the deformity. No matter what be the cause,

the deformity is the same. If of paralytic origin, it can be replaced upon the instant without the use of much force, but will often return to the abnormal position upon letting go of it. If not of paralytic origin, considerable force will have to be expended before you can restore the foot to its normal position. The replacing of the foot is accomplished by firm but gentle manipulation with the hand crowding it towards its normal position, rotating it outward, elevating the toes and expanding the arch so as to put the plantar fascia and the tendo-Achillis upon the stretch. After doing this, you will observe that the foot becomes of a snowy whiteness, and if you were to fix it in this position, the pressure required to keep it there would be so great that it would deprive the parts pressed upon of their nutrition, and there would be sloughing. Hence, after you have held the foot in its rectified position for a few seconds, you should let go your hold of it and allow the blood to return. As soon as the circulation has been restored, you should go through the same manœuvre again, this time holding the foot in the improved position a little longer, or until it becomes whitened, and then let go of it. If the case be one of double talipes equino-varus, after you have replaced one foot and let go of it, take the other and repeat the process with that. By the time you have reduced the deformity in the second foot, the circulation in the first will have been restored, and it can be again replaced as before. This process should be repeated twenty, forty, or a hundred times, as the case may be, until you can restore the foot nearly, or quite, to its normal position without the use of much power. After you have done this, you should ascertain to what extent the deformity can be rectified without interfering with the nutrition of the foot—without the foot becoming whitened, and secure it in this position with a roller bandage. If you can completely rectify the deformity without the foot losing its normal color, it will be safe to secure it in its natural position. Unless this can be readily accomplished, however, do not try to correct the deformity at that particular sitting. The leg of an infant should be first protected with a roller bandage of flannel before applying the adhesive strip, otherwise there would be danger of excoriation of the skin. The adhesive strip is placed with one end on the dorsum of the foot, then carried to the inside, underneath, and to the outside of the foot and up the leg. Sufficient tension is put upon the adhesive strip to draw the foot into as nearly a normal position as possible, compatible with the free circulation of blood within it. It is then secured in this position with a few turns of a roller bandage. The foot should be submitted to repeated daily manipulations while the bandage is yet applied. When the bandage is removed, which should be done every one, two, or three days, as the case may be, the parts should be washed with alcohol and water, the foot restored to its normal position several times, and then retained as nearly as possible in this position with a roller bandage. After a time you can mould a piece of leather to the foot, by first making it pliable by dipping in cold water. Or a very convenient method of accomplishing this is to take one of those little wooden models of a foot and leg of about the size of that of your patient, such as are used by ladies to place inside of stockings to facilitate darning them, and mould the leather over this, securing it in position with a bandage, and allowing it to dry, after which it can be applied to the foot. You continue to rectify the deformity in this way until the child is able voluntarily to

hold the foot in its normal position. As soon as the child begins to walk, the weight of its body will help to keep the foot from being displaced, and will complete the cure.

If the deformity is not corrected before the child begins to walk, pressure upon the foot in its abnormal position will intensify the deformity, and that which was at first a very slight and easily rectified abnormality becomes painful and difficult to cure. Pressure upon parts not provided with protective cushions gives rise to the formation of bursæ upon the outer margin of the foot. Further neglect may result in excoriations and sores, producing an inflammatory action, followed by reflex contraction of the muscles, which in turn, owing to their constant irritation, become structurally changed—shortened: *contractured*. When these changes have taken place, and the fibrillæ have become adherent one to another, no amount of power short of severing the diseased tissues will enable you to rectify the deformity. They must either be ruptured or divided, or, what is better, make subcutaneous section of them. Now, how are you to determine whether a muscle be contracted or contractured? To do this, bring the foot into as nearly a normal position as possible, and then apply point pressure to the part thus put upon the stretch; if reflex spasm is produced, the tendon, fascia, or muscles pressed upon are contractured, and require section in order that the deformity may be rectified.

You observe, in the case of this young lady, when I put the plantar fascia upon the stretch, point pressure produces reflex spasm. The same is true of the tendo-Achillis. The inference then is, that it is useless to make any attempt to straighten this foot without first dividing the contractured tissues. As the operation is accompanied with considerable pain, it will be necessary to anesthetize the patient. In doing this it is always essential to have the clothes loosened, so as not to interfere with the respiration. The lesson to be learned from this case is that whenever you make section of tendon, fascia, or muscle, for the relief of deformity, on that instant restore the foot to its normal position. By thus separating the ends of the divided tissue to the extent required for the correction of the deformity a space—vacuum—will be left, into which exudation will take place, and the exuded material will rapidly become organized. The old plan was to delay rectifying the deformity after the contractured tissues had been divided until the external wound had entirely closed and the inflammatory action which may follow the operation had subsided. Mechanical force was then applied and the newly-organized material exuded between the ends of the divided tissues was stretched until the foot was brought into its proper position. This stretching process was always very painful, and kept up a constant irritation, frequently resulting in inflammation and suppuration. Even after the foot was brought into its place, if the mechanical appliances were removed, it was very apt to flop back into its old position, owing to the want of power on the part of the muscles to retain it where it should be.

In regard to the knife to be used in the subcutaneous section of tissues, it is exceedingly important that it possess certain peculiarities. The handle should be so marked that you can always determine the direction of the cutting edge, though the blade be deeply buried in the tissues. The shank should be strong and well set in the handle. The blade, which should be about three-quarters of an inch in length, and either curved or straight, should be made very thick at the "back," and always rounded on the end. Most instrument-makers make their tenotomes sharp pointed, and those surgeons who use them run great risk of dividing arteries or veins, or puncturing nerves. Fig. 1 represents three varieties of tenotomes made by Messrs. Reynders

& Co., of this city, for me. That which has its cutting edge upon the convexity of the blade is the one which I use almost exclusively.

FIG. 1.



I will now divide the plantar fascia, and as I do so, the part being put upon the stretch, I can hear the snapping of the fibres and plainly feel them giving way. As the knife is withdrawn, and without a drop of blood having escaped, I place a small bit of adhesive plaster over the wound, thus effectually shutting out all air. Next I will divide the tendo-Achillis. You introduce your knife flatwise and in such a manner as to make a valvular incision through the skin. The blade of the knife, still kept flatwise, is carried beneath the tendon to the opposite side, when it is turned with its cutting edge towards the tendon. The tendon is now pressed down upon the knife, while at the same time a moderate sawing motion is given to the blade until the tissues are divided.

As my knife is passing through the tendon, you can hear a squeaking noise, and now, a sudden snap, indicating that the tendon is completely divided. Upon withdrawing my knife, I place a piece of adhesive plaster, as before, over the site of the incision, and then proceed, by manual pressure, to bring the foot into its normal position.

We are now ready for the application of the foot-board. The foot-board which I shall use in this case, and would recommend to you in all similar cases, is of very simple construction. It consists of a thin piece of board an inch or so longer than the foot, shaped somewhat like the sole of a shoe, but made narrow at the heel and broad at the toes. A strip of adhesive plaster, about an inch or an inch and a half wide, and long enough to pass over the instep and down underneath the board again, is placed with its middle part against the heel of the board, and a longer and broader strip of adhesive plaster, placed lengthwise of the board, beginning at the toe-end underneath, is passed back over the heel to the under side of the board and brought forward to the toe-end. The board is now padded, under the adhesive plaster, with cotton on the side which is to be placed against the sole of the foot. A firm bandage is applied over the adhesive plaster, and holds everything in place. The board is now ready for use. The malleoli and other bony prominences are protected from undue pressure by a liberal use of cotton, and the board is placed in position upon the foot. The foot is first brought to a right angle with the leg, and the two ends of the heel-strap are then brought forward, crossed over the instep, and passed to the under side of the board. It is necessary that the foot be placed at right angles to the leg before this is done, otherwise there would be danger of obstructing the circulation by making undue pressure with the adhesive strap. The foot is now securely fastened to the board by a roller bandage. The next step is to bring the broad strip of adhesive plaster attached to the toe-end of the board up against the front part of the leg, making sufficient traction upon it to retain the foot at a right angle to the leg. It is then secured with a few turns of the roller bandage, and the dressing is complete. Sometimes it is necessary to have an additional strip of adhesive plaster extending from the inside or outside of the foot to a position upon the leg, according to whether the foot is turned to the outside or inside. This dressing is much simpler than Stromeyer's foot-board, is inexpensive, and fulfils all the indications to be met. No complicated or expensive apparatus is required. The most important and most difficult part of the whole dressing

to procure is a good quality of adhesive plaster. This case was discharged at the end of six weeks from the hospital without deformity, and able to flex the foot voluntarily to more than a right angle. Was exhibited before the class December 14, 1881, before leaving the hospital.

The same principles which have been applied to this are applicable to any other form of club-foot. Of course, you will not be able to relieve all cases, but the earlier you begin treatment, the better will be your chances of effecting a cure. It is sometimes very difficult to restore the function of the muscle. Very often, if the case be left until adult life, the bones of the foot will have become so altered that it will be impossible by this means to rectify the abnormalities of bony structure. Thanks, however, to the efforts of Prof. Lister, we are now able to deal very successfully even with this class of cases. Under the antiseptic spray we can cut directly down upon the bone with perfect freedom and safety, remove a wedge-shaped piece, and restore the foot to its normal position, an operation which only a few years ago was entirely impracticable.

*Talipes Equino-varus—Section of Plantar Fascia and Tendo-Achillis—Hudson's Shoe—Rapid Progress towards Recovery.*—I merely asked this little girl to come to the clinic to-day in order that you might see how rapidly these deformities can be rectified. The deformity which existed was a perfect duplicate of that of the young lady which you have just seen. The only difference between the two cases is the age of the patients—this one being seven years old and the young lady seventeen. It lacks two days of being three weeks since I operated on this little girl. She is now able, as you see, to stand with her heel upon the floor. I operated upon her in exactly the same way as I have upon the young lady—making section of the plantar fascia and tendo-Achillis subcutaneously, and dressing the foot in the manner I have already shown you. At the time of the operation there was no loss of blood whatever. The healing of the wound was completed without the formation of a drop of pus, and after ten days she was able to make traction with her tendo-Achillis; but she could not, nor can she now, voluntarily flex her foot on account of the paralysis of the muscles on the front part of the leg. Having rectified the deformity, we have now to cure the disease, namely, the paralysis of the muscle. Do not make the mistake of thinking that when you have reduced the deformity you have cured the disease. Not until the function of the muscles has been restored to such an extent that they hold the foot in its normal position should the case be discharged as cured. To this end the muscles should have the benefit of daily massage and the application of electricity. The injection of a solution containing one-eightieth of a grain of strychnia, directly into the paralyzed muscles, is often of considerable service in restoring them to their function. This can be done by means of a hypodermic syringe, and may be repeated every ten, twenty, or thirty days, according to circumstances, until the muscles have recovered their power and the foot is held in its normal position by them without other mechanical aid. Until then no cure has been effected.

This little girl you see is wearing a shoe (see Fig. 2), to the sole of which is fastened two iron rods jointed at the ankle and running up on either side of the leg to the top of the tibia. At the upper end a padded band

encircles the leg, and to this are fastened little hooks, to which, in turn, are attached India-rubber muscles, which pass downward on each side of the leg. The lower end of each of these rubber muscles is furnished with a piece of strong catgut, which plays over a semi-circular wheel opposite the ankle-joint. By this means any amount of tension can be exerted upon the foot, and it can thus be readily kept in its normal position. I used to have a shoe constructed with a stirrup over the toes, to which was attached an elastic strap, extending up to the band encircling the leg just below the knee. But Dr. Hudson has devised this shoe, which I consider a very great improvement upon mine.

*Talipes Equino-varus.*—Here is another case of talipes equino-varus. The deformity is apparently so slight that most persons would think that no operation would be required. I see that the girl is wearing what pretends to be one of my club-foot shoes (see Fig. 3); but, on account of its faulty construction, it is of no service whatever.

The lateral movement, so important to these cases, is entirely prevented, owing to the fact that the part of the sole adjacent to the heel has not been properly made; hence the elastic side-straps are prevented from acting. This difficulty can easily be rectified by rounding off the inner and outer corners of the sole next to the heel, so as to allow full play of the orbicular joint, opposite the medio-tarsal articulation. The shoe is of such simple construction that any intelligent blacksmith, in any part of the country, could readily make it. The late Prof. Crosby devised a very serviceable and cheap substitute for my shoe in the following manner: Taking a pair of stout shoes that fitted the patient, he cut the sole of the one for the deformed foot directly in two, at a point opposite the medio-tarsal junction; the two parts were made fast to each other by means of links of a chain, and the necessary inversions or eversions produced by elastic straps.

Upon a careful examination of this patient, I find that no shoe will do her any good until an operation is performed, because the muscles and fascia have become contracted. Now, observe what takes place when I press upon the plantar fascia, after it has been put upon the stretch. You see, there is a reflex spasm; the same is true with the tendo-Achillis. Hence, I shall proceed to operate in this case as I have done in the other.

In the course of a few weeks she will be able to put on the club-foot shoe, which she will wear with advantage. Electricity, massage, and the cold-water douche should be employed to complete a cure.

One word in regard to the application of electricity in these cases. Before applying it, the deformity should be reduced, as far as possible, by means of manipulation with the hands, so that when the muscles are caused to contract by the application of electricity, they should be placed in the most advantageous position possible. If you have no battery at hand, you can cause vigorous contraction of the muscles by taking them up between your thumb and fingers, and giving them a sharp, quick pinch. Here, in this case, you see this shows very plainly; every time I pinch the muscles of the leg, you see the foot is drawn up. Returned at end of two weeks,

FIG. 3.



FIG. 2.





when tendo-Achillis was firmly united, so that she could voluntarily extend the foot. One month later was shown to class perfectly restored and wearing ordinary shoe.

## ORIGINAL ARTICLES.

### LITHOLAPAXY: WHAT IS ITS VALUE?

By W. H. VAN BUREN, M.D., LL.D.,

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WHEN a novelty in surgery claiming superior merit is promulgated under good auspices, it becomes the duty of those by whom it has been subjected to trial to make known the results of their experience.

Shortly after reading in the *American Journal of the Medical Sciences* for January, 1879, the paper of Prof. Henry J. Bigelow, M.D., of Harvard, on the operation which he has styled "litholapaxy," or lithotripsy completed at one operation, I subjected a patient with stone to the new process. The favorable issue of this case led me to repeat the new operation upon the next case that offered; this was also successful; and it so happens that since that date I have had occasion to employ, or to advise, no other operation for stone in the adult.

I have been led to this course by the simple fact that the bladder has invariably shown the unexpected and entire tolerance of the prolonged operation which Prof. Bigelow was the first to demonstrate that it possesses, when properly managed.

In thirty-four cases in which I have been more or less immediately concerned since January, 1879, no stone has been encountered, although the majority were of considerable size, which could not be grasped and crushed by the lithotrite; and in no instance has there been a failure to free the bladder from stone in a reasonable time at one operation. Of these thirty-four cases in which the lithotrite has been used by myself, Dr. Keyes, or Dr. L. A. Stimson, singly or conjointly, thirty-three have resulted in reasonably prompt and satisfactory cure. In the solitary fatal case there was pre-existing suppurative inflammation of both kidneys, masked by the aggravated sufferings of the patient, and suspected, but not certainly made out. It was evidently not a fit case for this or any other operation.

In one of the latest cases, an otherwise healthy man of sixty-eight, who applied to me for bladder disease of long standing, not knowing he had stone, the unusually large amount of ten hundred and sixty-five grains of dense brown urates were removed in seventy-five minutes. There was but one stone in this man's bladder, and its grasp was over an inch and a half. The patient was up and about within a week.

In the latest case, a man of seventy-five, with quite a large prostate, four hundred and fifty-three grains of phosphate stone were removed in sixty-five minutes, and the bleeding (from the prostate) was unusually profuse; but there was no chill, and the sequelæ were favorable. In these cases the operation was done entirely by Dr. Keyes.

The cardinal feature of this operation, which explains the remarkable absence of after ill effects, is

that the bladder, relieved from the presence of a foreign body in its cavity, is left at rest, and free from any cause of further irritation. In this respect it shares the great advantage of lithotomy.

In less than a third of the cases the catheter has been required for a day or two after the operation; but the subsequent atony of the bladder, which we had been led to anticipate from the experience of ordinary lithotripsy, has been conspicuously absent. In fact, in no case which has passed within my cognizance, have there been any symptoms showing other than complete tolerance on the part of the bladder under gentle and judicious manipulation, and entire absence of bad effects afterwards.

In a certain proportion of the cases in which there has been chronic cystitis previous to the operation—say one in six or eight—the patients have continued to form phosphatic gravel in the bladder from time to time; but this tendency has been antagonized by systematic washing out by means of the fountain syringe.

The youngest of our patients subjected to litholapaxy was a boy of nineteen. In children I am not prepared to advise this operation, although the instruments we have employed are not larger than the ordinary lithotrites. But in view of the narrowness of the urethra before puberty, and of the fact that I have never lost a child after lithotomy in between thirty and forty cases, I should give preference to the knife.

Cases of stone will doubtless occur in which urethral stricture or rigidity may prevent the employment of large evacuating tubes so desirable in the new operation, or in which a patient's feebleness may render it necessary to cut short the proceedings before the bladder has been entirely cleared out, but these must be exceptional.

From my experience of the last three years, I judge that the operation of lithotomy, except in children, bids fair to become a somewhat rare and unusual proceeding, in the presence of a safer and equally efficient remedy.

Let us give due credit, then, to Bigelow's original improvement in the treatment of stone in the bladder, which, unless I am in error, promises to add great honor to American surgery.

NO. 1 PARK AVENUE, NEW YORK.

### THE PRACTICAL EXAMINATION OF RAILWAY EMPLOYEES,

AS TO COLOR-BLINDNESS, ACUTENESS OF VISION AND HEARING.

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AT the conclusion of the International Medical Congress last August, in London, but two subjects were thought so important as to be desirable to be brought before the Congress for its official sanction as the voice of the entire profession. Resolutions were adopted, 1, strongly urging the necessity of vivisection in advancing medical science and art; and, 2, strongly urging upon the various governments to appoint delegates to an international commission to



agree upon tests of sight suitable to be enforced in the case of signallers and look-out men and such, by land or sea, with a view to the safety of life and property. This resolution emanated from the Ophthalmological Section, and was drawn up by a committee consisting of the following persons, all of whom had made themselves conspicuous by their studies upon this subject, and by their labors to effect this reform by appeals to the authorities of their various nations: Chairman, Prof. Donders, for the Netherlands; Mr. Wm. Bowman, for Great Britain; Dr. Dufour, for Switzerland; Dr. Gama Lobo, for Brazil; Dr. Samuel T. Knaggs, for N. S. Wales; Prof. Leber, for Germany; Dr. Libbrecht, for Belgium; Dr. L. Maréchal, for France; Dr. Ole Bull, for Norway; Dr. Osio, for Spain; Dr. Raymond, for Italy; J. T. Rudall, F.R.C.S., for Victoria; Prof. W. Thomson, for the United States; Dr. Warlomont, for Belgium; Secretary, Dr. Brailey, London.

That no wide control has as yet been obtained is shown by the need for further action advised by the Congress; but the discussions, and an acquaintance with the schemes that had been and were then proposed, convinced me that one of the main difficulties has been found in the need of some more simple method for determining the color sense, since all those now before the profession demand the presence of special or medical experts of high culture to pronounce upon the individual applications of the test, and specialists of this type are not abundant in any country.

In the hope that a common standard for land and sea, which would give a qualitative as well as a quantitative test for color sense, might come into general use, the committee will recommend the iso-chromatic tables on the principle of Stilling, consisting of squares of confusion colors and test colors intermingled so as to form letters, but which will be found too complicated to be trusted to any but trained examiners of special educational fitness, or, in other words, medical men acquainted with the diseases and defects of the eye.

The European idea seems to be to propose to the governing powers an organization composed of medical experts in sufficient number, who shall personally examine the railway employés under the direction of some one or more eminent ophthalmic surgeons, to be paid by the government, to establish a standard for sight and color sense, and to give or withhold certificates which will entitle the men to remain in or leave the service. From the failures to secure this control it may be inferred that opposition has been successfully made by the railways, or that the persons in authority have not been convinced of the practical value of the schemes. No steps have yet been taken in England, and it is felt that there, as in this country, no amount of agitation would suffice to bring the railways under such legislation.

Upon the conclusion of the labors of the committee, the plan described below was briefly mentioned as the one most feasible in our country, and much interest was shown in it, and in the instrument for the use of the detection of color defects; and it

was agreed that with it any properly instructed non-medical person could make the first examinations, and transmit the results for the decisions of a medical authority; and that large bodies of men might thus be safely passed through the testing without the presence of medical examiners. One member of the committee has already sent to me for the instrument, with the statement that he will advise his government to employ it on the railways; and another instrument has been sent through the British Consul at Philadelphia, at the request of the Secretary of the Marine Department, for the use of the Board of Trade in London.

In giving, then, the details of the system for examination into the "sight, color sense, and hearing," which was prepared by me for the Pennsylvania Railroad, and perfected by the aid of a committee of their transportation officers, and which has been adopted, I feel that a decided step forward has been made, and that the ideas which underlie it are substantial, viz., 1. That it would be impossible by any agitation to subject a road passing through many sovereign States to legislation which might be considered hostile to its interest. 2. That for the protection of lives and property any road would gladly accept the aid of scientific advisers when offered in a practical form.

The signal failure to carry out State legislation obtained by public agitation in Connecticut, under which scientific experts, designated by the Governor, and paid by the road, were provided for; and fixing severe penalties for the employment of any man not provided with experts' certificates, proved that the officers of the roads were not willing to submit their employés to the scrutiny of State officials who, adopting their own standards, could practically summarily discharge perhaps fifteen per cent. of their men, disturb the discipline and impair the organization of their roads; whilst the political power of a large number of such employés, each with a ballot, was fully demonstrated in their successful demand for the repeal of this law. Any advice on this subject to be accepted by the railway officials ought to be given by scientists of their own selection, and must be confidential, in order that they may either discharge men unfit for service, or transfer to positions where they can do no harm those who by education are too valuable to be lost to their service; whilst the men would gladly accept any wise precautions against the dangers of their occupation which could be provided for their own safety.

These difficulties are overcome by the employment of the instructions which I have prepared for the use of the Pennsylvania Railroad, and which can be followed by a non-medical person, properly instructed, who will place the results on a blank, and transmit them to the professional expert having supervision of the entire examination. From these data a just decision can be made as to the sight, color sense, and hearing of each employé.

In accordance with a wish expressed many months ago, that I should suggest some practical method for the examination of the employés of the Pennsylvania Railroad, as to their ability to see the colored signals by day and night used in the service, I de-

voted much time to the subject, in an effort to overcome the following difficulties:

1. To ascertain whether each man possesses *sight* enough to see *form* at the average distance; and *range of vision* to enable him to see near objects well enough to read written or printed orders and instructions.
2. To learn if each man has color sense sufficient to judge promptly, by day or night, between the colors in use for signals.
3. To determine the ability of each man to hear distinctly.

The difficulties to be overcome were found in the magnitude of the task, involving the examination of thirty-five thousand men now in the service, with the necessity of extending it to all who may be hereafter employed, distributed over thousands of miles of road; and in the absence of professional experts in sufficient number, possessing enough special training to fit them to decide with precision the points in issue.

It soon became apparent that some system would be needed that could be put in force by each Division Superintendent, acting through an intelligent employé, under the general supervision of one or more ophthalmic surgeons of recognized skill, to whom all information collected could be transmitted, and who would be able to decide all doubtful cases, and thus protect the road from any danger arising from incapable employés, and save good and faithful men from the evil of being discharged from the company's service, or prevented from being employed on other roads, on insufficient grounds.

It was believed that the facts could be collected by non-professional persons, and could be so clearly presented to the Division Superintendent and to the professional expert, as to enable a perfectly correct decision to be made in every case; and that men fit for service would be recognized, whilst those deficient in sight, color sense, or hearing, could be referred to the expert if they so desired, or transferred to places in the service where their defects, if not remediable by treatment, could do no harm either to the road or to the public.

Such a system was submitted to the General Manager of the Pennsylvania Railroad some months ago, and has been perfected by the labors of a special committee of the Society of Transportation Officers in conjunction with the writer. The entire method has furthermore been submitted to a practical experimental test extending over nearly two thousand men, employed as conductors, engineers, firemen, and brakemen, and the results have satisfied the committee and myself that our object has been fully attained, and that the system proposed may now be put in force with confidence in its practical utility. As an evidence of this, I may cite two complete detailed reports, including 1383 men in all. The blanks upon which the original entries were made, have all been submitted to me, and they satisfy me that the results in the summary of each of these excellent reports may be confidently accepted, and thus we have become acquainted with the fact that there were in the service of the Pennsylvania Railroad, of the 1383 men examined, 246 men deficient in the full acuteness of vision, 55 absolutely color-blind, and 21 defective in hearing.

In one of the reports, an examination not included in the instructions from the committee, was made with colored flags and colored lights by night, and 13 men failed to be able to recognize them from a total of 24, who were color-blind to the test used for its detection, but I have little doubt whatever that the entire number of color-blind, viz., 55, would also fail under a carefully-devised system of tests by the usual railroad signals.

The entire number reported as *defective* in color sense, 4.2 per cent., is up to the average, as reported by the best authorities in its percentage; but those absolutely color-blind, and hence unable to distinguish between a soiled white or gray and green, or a green and red flag, are fully 4 per cent.; and this proves that the instrument employed in this part of the examination has met our expectations fully.

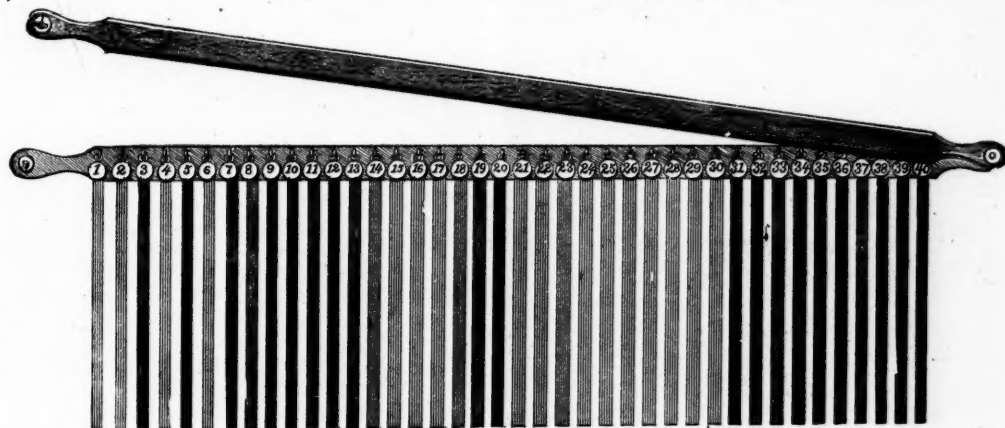
As this was the point about which I had most doubt, a word or two of explanation may be proper, more especially as many great authorities declare that no examination for color-blindness should be accepted, unless made by professional specialists.

The examination for color-blindness now generally accepted and proposed by Prof. Holmgren, consists in testing the power of a person to match various colors, which are most conveniently used in the form of colored yarns. Usually about 150 tints are employed, in a confused mixture, and three test colors, viz., *light green*, *rose* or *purple*, and *red*, are placed in the foregoing order before the person examined, who is directed to select similar colors from the mass. The examiner sits then in judgment, and decides whether the color sense is perfect from the selections made, or from those *not* made, or from them both, and from the prompt or hesitating manner of the examined. It has been our effort to render this more simple, and to so arrange the colors that they may be identified by some number, so that an expert, although absent from the scene, would know by these numbers the exact tints selected, and thus be fully competent to declare from them the color perception of any person whose record had been properly made. From theory based upon scientific knowledge, and from much experience, I was able to arrange an instrument that would have the real colors, and those usually confounded with them, "confusion colors," placed in such relations to each other, and so designated by numbers, as to make an examination for color-blindness possible by a non-professional person, who could conduct the testing, record it properly, and transmit it to an expert capable of deciding upon the written results. Hence there is no departure from the system of matching tints already established, the only novelty being in reducing the number of colors to those similar to the test colors, and to those usually chosen by color-blind persons, and so identifying them as to enable an absent expert or superintendent to know precisely what colors had been selected to match the test colors.

The theory of the instrument (consisting of a stick with the yarns attached, see Figure), is that color-blindness is most promptly detected by using the *light-green test-skein*, and asking that it be matched in color from the yarns on the stick, which are arranged

to be alternately green and confusion colors, and are numbered from one to twenty, the person being directed to select ten tints, and the examiner being required to note the numbers of the tints chosen. It will be seen that the odd numbers are the green, and the even ones the confusion colors, and, that if

tific expert to convince the manager of a railroad that it would be most dangerous to place the lives of people under the guidance of an engineer who could not distinguish, if green-blind, between a soiled white and a green flag, or between a green and red flag, or other signal of these colors.



a person has a good color sense, his record will exhibit none but odd numbers; whilst, if he is color-blind, the mingling of even numbers betrays his defect at a glance to the supervising expert or superintendent.

There are forty tints on the stick, and the first twenty are given to the detection of color-blindness, using the *test-green*, and if the color sense is deficient, it will surely be revealed.

To distinguish, however, between green-blindness and red-blindness, the *rose-test* is used, and those color-blind will select indifferently, either the blues intermingled with the rose, between figures 20 and 30, or perhaps the blue-green or grays from 1 to 20, and thus reveal their defect, and establish either green- or red-blindness.

Finally, the *red-test* corroborates these results, and satisfies the most sceptical of color defect, when the "confusion tints" or even numbers between 30 and 40 are selected.

On a suitable blank these figures are placed in the order of examination, and a glance of the eye reveals the color sense of the person examined; since, if anything but odd numbers are chosen, there is a defect; or if, with test one, anything beyond 20 is chosen; or if, with test two, anything but odd numbers between 20 and 30; or, with test three, anything but odd numbers between 30 and 40. The colors can readily be changed in the instrument, if it should be found desirable.

It is theoretically and practically a fact, that the tints as arranged on the instrument look quite the same in color to color-blind persons, and that those having a perfect color sense can thus form an idea of this infirmity. If, then, green and gray are indistinguishable, and green and red, when of the same depth of color, seem to be entirely the same to the color-blind, it needs no opinion from a scien-

It is a fact that some of the color-blind promptly give the proper names to the flags, and answer correctly, when asked, what they would do in presence of such signals but it must be remembered that they may see perfectly, and have always had some perception of these colors, and do give them their conventional names, perhaps, but that they are unable to distinguish them at once and infallibly, and that it will only require a further extension of our method of testing to demonstrate the inability of persons color-blind to our examination to recognize the signals, by day or night, which are now depended upon to prevent accidents of the gravest character. This must be done by demanding that the signals be matched, and not named, and is incorporated in the instructions herewith submitted, so that the tints which color-blind men select with the railroad signals, may hereafter be known and recorded.

My conclusions from a study of the subject in connection with the railway service are:

1. That there are many employés who have defective sight, caused either by optical defects, which are, perhaps, congenital, and which might be corrected with proper glasses, or due to the results of injuries or diseases of the eyes, remediable or not, by medical or surgical treatment.

2. That one man in twenty-five will be found color-blind to a degree to render him unfit for service where prompt recognition of signals is needed, inasmuch as color-blindness for red and green renders signals of these colors indistinguishable. It is a fact in physiological optics, however, that yellow and blue are seen by those color-blind for red and green, and that yellow-violet blindness is so rare that it might lead to the use of these yellow and blue colors, in preference to red and green, wherever possible.

3. That color-blindness, although mainly con-



genital and incurable, is sometimes caused by disease or injury, and that precautions might be needed to have either periodical examinations or to insist upon it in cases where men have suffered from severe illness or injury, or when they have been addicted to the abuse of tobacco or alcohol.

4. That the method, when adopted, will enable the authorities to know exactly how many of their employes are "satisfactory in every particular" as to sight and hearing; and that the examination will have the further value of making the division superintendents acquainted with the general aptitude of the men in their divisions as to general intelligence.

5. That the entire examinations can be made at the rate of at least six men an hour; whilst that for color sense alone can be done in a very few minutes for each man by an intelligent employé.

6. That to secure the confidence of the employes, and of competent scientific critics, as well as of the public generally, it is advisable to have some official professional specialist to whom all doubtful questions could be referred, and who should be held responsible for the accuracy of the instruments, test cards, etc., to be put in use, and who should have general supervision of the entire subject of sight, color sense, and hearing.

7. That from the impossibility of subjecting the immense number of employes on our large railways to the inspection of the few medical experts available, and to secure the examination of those hereafter to be employed, some system of testing by the railway superintendents has become a necessity, and it is believed that the one prepared will answer the purpose.

By request, these views were communicated to the proper officials of the Pennsylvania Railroad Company, and on July 1, 1881, I received a communication from the General Manager, from which I make the following extract:

"DEAR SIR: I beg leave to inform you that the apparatus invented by you, and the rules and regulations entitled 'Instructions for examinations as to vision, color sense, and hearing,' prepared by a committee of transportation officers of the Pennsylvania Railroad and yourself, for the use of our officers in examining employes for defects of sight and hearing, were laid before the Board of Directors, who approved and adopted them, and authorized me to put them into effect, subject to such changes from time to time as experience may prove to be necessary for the proper working of the system.

"In putting these rules into effect, I take pleasure in designating you as the expert to whom, under the rules, such cases shall be referred as may require the judgment of an expert."<sup>1</sup>

#### A CONTRIBUTION

#### IN REFERENCE TO THE TREATMENT OF COMPOUND FRACTURES OF THE LEG.<sup>2</sup>

BY ERSKINE MASON, M.D.

HAVING been interested lately to arrive at a knowledge of the usual period of time required for

the repair of a compound fracture of one or both bones of the leg, as well as the method employed which seems best to answer the indications of treatment, as well as add to the comfort of patients in the majority of cases that pass under our observation, I was led to study the result of my own experience with these cases.

I find, that though a large number of these cases have passed under my observation, I am only able at present to gather complete notes of thirty cases from the time of accident to the period of their discharge. These cases have been selected from hospital practice, and represent all the varieties and various features, both as to constitution of patient and character and cause of accident, that the surgeon meets with in his ordinary hospital service. From my recollection of other cases that have been either entirely or partially under my observation and treatment, the results are about the same as those obtained from the analyses of the thirty cases.

I think I have made use of almost every kind of splint and variety of dressing in the treatment of these cases, and I have come to the conclusion that the plaster-of-Paris dressing in some one of its varieties, but chiefly the plaster bandage, with or without brackets, meets the indications in the majority of cases, either applied at once or later on in the case, better than any other appliance I have resorted to. I am well aware of the dangers which may arise in its use, but to those who are accustomed to its application, and with the requisite care and watchfulness that these cases require, I think the risks are slight and may be avoided.

The objections that some have raised as to the want of cleanliness, from the discharges flowing beneath the bandage, I believe are preventable, and when suitably bracketed, may be adapted to almost every case.

Where from various causes it would not be advisable to use the permanent dressing at once, in my hands no apparatus has seemed to give more comfort to the patient than the fracture-box, with the limb surrounded by bran, as first used, I believe, by Barton.

Though much that has been said in favor of plaster dressings may be applicable to other permanent dressings; still, the ease with which the plaster bandage is applied and fenestra cut in it, causes me to give it the preference, as well as the ease in this dressing with which the antiseptic treatment may be employed.

Some months ago a plan was adopted by some of our hospital surgeons of wrapping the leg up in large quantities of either carbolyzed or salicylized jute in addition to the ordinary Lister dressings, but without any other support to the limb. Though these dressings were to be removed as seldom as possible, still the changes in some had to be made frequently, at least for the first week or ten days of treatment. I have not only had the opportunity of observing this practice in the patients of others, but have given it a trial myself in several cases. It has been abandoned by me, however, for the following reasons:

The bones are not given that steady support which I believe they require.

<sup>1</sup> The official instructions will be found under the head of "Notes and Queries," p. 59.

<sup>2</sup> Read before the New York Surgical Society, Nov. 22, 1881.

Each dressing entails unnecessary pain, no matter how carefully the limb is handled.

The wounded limb is kept at times too long from observation, and burrowing of pus quite extensively has taken place before it was detected.

At times so extensively bathed in pus have I noticed the limb, that though it be aseptic, I cannot but think it is prejudicial. This dressing gives to the limb too much of the appearance of being enveloped in a large poultice; if, indeed, it does not act as such.

Finally, by the bones not being firmly supported, there is more or less motion between the fragments taking place during the changing of the dressings and various movements of the patient. This I have seen cause secondary hæmorrhage, and in one case I am cognizant of, I fear was the cause of hæmorrhage which proved fatal.

With reference to the plan of treating these cases by through-drainage, as lately described by Dr. Markoe, I possess full notes of but four cases, though I have used it in other cases whose complete histories I regret I do not possess. In all these cases, I used it in connection with the plaster splint. From the results it has furnished in my hands, it has become a favorite mode of treatment with me.

Within the past few months, two cases have been more or less under my observation where the old practice of sealing the wound was employed. The sealing, however, was done by means of protective and Lister's dressing employed, and the limb firmly bandaged. In one case the bandage used was of rubber. The limbs were then securely fixed in a fracture-box. Both tibia and fibula were broken in each case. The ages of the patients were forty-five and thirty-three years. In one case the fracture was caused by a heavy piece of timber falling upon the limb; in this instance there was a great deal of subcutaneous laceration, and there were two openings leading to the fractured bones, situated about three inches above the inner malleolus. The wound was dressed August 29, soon after the receipt of fracture. September 2 the elastic bandage was removed, and considerable pus found beneath the dressings, with two or three blebs on either side of the ankle. The limb being washed with a solution of carbolic acid, the same kind of dressings was applied, save the rubber bandage. September 16, Lister dressing was removed; wounds found closed; limb allowed to remain in the fracture-box until October 6, when it was placed in plaster, and the patient permitted to go about. With respect to his temperature, it was  $100^{\circ}$  on the evening of the first day; on the evening of the second day it was  $101^{\circ}$ ; after that it was normal throughout the treatment of the case.

In the other case, the fracture was produced by the kick of a horse. There were two wounds about two inches above the external malleolus, the laceration of soft parts was less than in the previous case. The case came under treatment shortly after receipt of injury, on August 27. But one dressing (Lister) was used; this being removed September 15, and the wound found closed. October 4 a plaster splint was applied, and patient allowed to move about. In this instance there was no rise of temperature.

I have met with the same gratifying result from this treatment in two cases of fracture of the femur occurring in boys, and in one case of both bones of the fore-arm in an adult, but in these cases the injury to the soft parts was but slight. I merely allude to these cases, however, as I propose to confine my remarks to fractures of the leg.

The two cases whose histories I have given were certainly such as I of late have been accustomed to treat with drainage-tubes introduced at the first dressing; and I watched their progress with much interest. They certainly have gone far to confirm what my observations have for some time been leading me to entertain, namely, that at present we are apt to be too free in the use of the drainage-tube in these cases, at least we resort to them too freely in many cases immediately upon the receipt of injury. We introduce them to anticipate the burrowing of pus, and to remove as expeditiously as possible the discharge we expect to take place. Whereas the presence of these very tubes, when too freely used, I feel sure, at times have by their presence in the soft parts invited the secretion of pus, and kept up the discharge which we desire to avoid. Certainly, I have seen two and three tubes introduced at once where I feel certain that one for the present would suffice; if indications for more arise they may be introduced later without detriment to the case.

We never can be sure if the discharge will burrow, nor the direction it will take; hence, I think at first we should be moderate in the use of the tubes.

One other point with reference to drainage-tubes. I fear that in many instances we allow them to remain too long, and, acting as foreign bodies (which they are), tend to keep up a discharge, and delay the conversion of a compound into a simple fracture. Again, when left in a long time, their tracks through the soft parts acquire callous walls, which sinuses after the removal of the tubes are long in closing.

Experience has taught us all, I believe, that since the introduction of antiseptic measures we are now enabled to save limbs that before would have been condemned to amputation. Observation, however, has shown me that we may have too implicit faith at times in the efficacy of antiseptics, and that we may attempt to save limbs which more judicious judgment, as results have proved, should have been condemned, or save limbs which are of no service to the patient, and subsequently have to be removed.

Of the thirty cases of compound fracture of the bones of the leg, we find sixteen of the tibia, three of the fibula, while of both tibia and fibula there are eleven. Seven of these cases required amputation. Of primary amputations there were five, three of which recovered, while two died—one from delirium tremens, the other from erysipelas and alcoholism. Of secondary amputation there were two cases. Both recovered.

Eighteen of these cases were treated in plaster-of-Paris dressings—either by the bandage alone or else strengthened and assisted by brackets, as the cases seemed to require. Nine of these cases were put up in the permanent dressings at once, and nine

after the lapse of some days after the injury, the average being about the twenty-fourth day.

In those cases where the apparatus was applied immediately, the average day of its removal was the twenty-fourth; while in those cases where there was necessary delay before plaster could be used, the average period of removal was the thirty-eighth day.

In those cases where the splint was applied after the lapse of some days, we find, in several instances, it had to be removed and reapplied. The causes for which we find to be in one case the splint being too loose, one from pain, one from ulceration, one from unpleasant odor arising from the splint, one from erysipelas, and one from no union.

Among these eighteen cases we find four deaths/

One from pyæmia on the eighth day. This fracture was caused by a heavy weight falling upon the upper third of the leg. Hæmorrhage was severe, and only arrested by compresses of cotton with persulphate of iron. Pulsation in both tibials was felt at the foot. Gangrene set in on the fifth day, rapidly extending, so as to involve the whole thigh.

One from shock and repeated hæmorrhages, traumatic delirium. Died on the fourth day.

One from alcoholism. Death on the seventh day.

One from erysipelas. Death on the sixty-first day.

The length of time that these patients were under treatment, viz., from the time of their accident to the day of their discharge, we find the average to be eighty-two days.

Four cases were treated by the method known as through-drainage (Markoe), viz., plaster bandage, drainage-tubes, and frequent washings with carbolic acid. The average duration of these cases was forty-nine days. Several other cases I have treated by the same method, and my impression is that they have all done well. Not possessing full notes of them, they are omitted in this table.

Five cases were treated upon Volkmann's posterior tin splint, with jute and strict Lister dressings. We find in these the average number of days of treatment to be sixty.

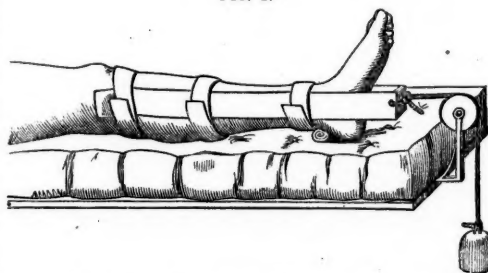
Among these five cases are recorded two deaths. One from pleurisy, pneumonia, septicæmia on the eighth day. The other of erysipelas upon the seventy-eighth day. This case, however, was not treated throughout upon Volkmann's splint. Union being delayed, this splint was changed to one of plaster. On the sixty-third day some sequestra were removed, splint reapplied, and erysipelas set in on the seventy-third day. In several of these cases fragments of bone were removed at various times.

In a large proportion of all these cases antiseptic treatment has been employed.

dressing is one which combines the principles of extension and counter-extension with lateral support. This dressing, from the ease with which the materials for its construction are obtained, from the simplicity of its application, and from the excellent results following its use, has become most popular with the surgeons of Philadelphia.

The dressing is applied as follows: The patient is placed in a firm bed, and the injured limb is kept moderately extended. A strip of adhesive plaster two and a half to three inches in width is then cut; it should be long enough to extend from just below the seat of fracture on one side of the limb, to a short distance below the sole of the foot, and then up to a corresponding point on the opposite side of the limb. In the middle of this strip a block of wood, perforated in the centre, two and a half inches in width by three and a half inches in length, is placed; another strip, of equal width and long enough to extend slightly above

FIG. 1.\*



the malleoli on either side, is fastened to the inner side of the block, which may be held in position by several circular strips of adhesive plaster, forming a stirrup extending three or four inches below the sole of the foot. The block serves to spread the plaster and keep it from pressing on the malleoli, and also to furnish a point of attachment for the cord, to which the extending-weight is fastened. (See Fig. 1.)

The limb should be shaved if the growth of hair is abundant; the plaster is now warmed and applied to either side of the limb, circular strips of adhesive plaster two inches in width being then carried around the limb to fix the lateral straps; these strips are applied just above the malleoli, at the middle of the leg, just below the knee; and one a short distance above the knee. A roller bandage is next applied to the limb from the toes to the groin, and may be finished with a few spica-of-the-groin turns. This bandage gives fixation to the extension apparatus, and also, by its pressure, serves to control muscular spasm in the injured limb.

Lateral support is now given to the limb by two sand-bags, the outer or long sand-bag extending from the axilla to the external malleolus, the inner or short bag from the perineum to the internal malleolus. These bags are made of stout muslin, and when filled with dry sand should measure at least four inches in diameter.

A cord is then passed through the perforation in the block and fastened, and the free end is passed over a pulley attached to the foot of the bed. A weight of from five to twelve pounds is fastened to the cord, and the foot of the bed is slightly elevated to prevent the patient from sliding downwards. The weight of the patient's body in this dressing acts as the counter-extending force.

The dressing is usually kept on from four to six weeks; and when union is firm, it is removed and a plaster-of-Paris or binder's-board splint is applied to

\* Represents the extending strips carried only to the knee.

## HOSPITAL NOTES.

### TREATMENT OF FRACTURES OF THE FEMUR IN THE HOSPITALS OF PHILADELPHIA.

(Reported by H. R. WHARTON, M.D.,

SURGEON TO THE CHILDREN'S HOSPITAL, PHILADELPHIA.)

In the treatment of fractures of the femur, in the hospitals of Philadelphia, the most widely employed



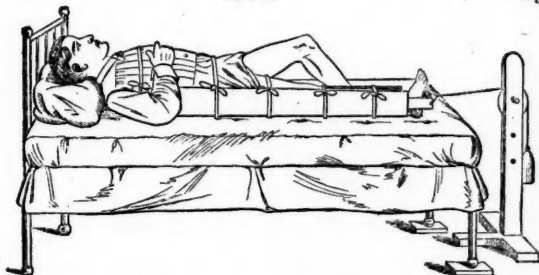
the thigh; and at the end of eight weeks the patient is allowed to leave his bed and go about on crutches. This is the dressing generally applied for fracture of the shaft and neck of the femur in the Pennsylvania, Episcopal, University, Jefferson College, Presbyterian, Children's, Philadelphia, St. Joseph's, Jewish, German, St. Mary's, and Germantown Hospitals.

Some modifications of the above dressing, though not affecting its general principles, are made by a number of the surgeons connected with the previously-named institutions.

Dr. Morton, at the Pennsylvania Hospital, uses an apparatus devised by himself for making extension. It consists of a soft leather splint surrounding and buckled to the limb a few inches below and above the knee, with an opening left for the patella; strips extend from the lower portion of this splint, and are fastened to a block below the sole of the foot, to which the extending-weight is attached; a band encircles the limb a short distance above the malleoli, which keeps the extension-strips in place.

Prof. Ashhurst, at the University Hospital, in cases of fracture of the shaft of the femur, uses the adhesive-plaster apparatus for making extension, but carries the extending-bands and surrounding bandage only to the knee, and makes lateral support by two wooden splints and bran-bags; the external or long splint extends from the axilla to the external malleolus, and the inner or short splint extends from the perineum to the internal malleolus; a splint-cloth is placed under the limb, in which the splints are wrapped; bran bags, corresponding in length to the splints, being then

FIG. 2.



placed on either side of the limb, and the splints being brought up into position and secured by five or six bands. (See Fig. 2.) For fractures of the neck of the femur, he employs the ordinary sand-bags to give lateral support to the thigh.

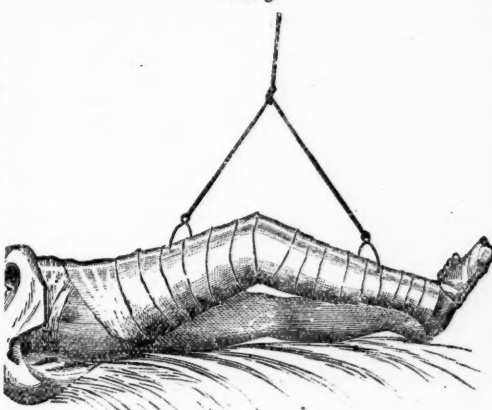
Dr. Nancrede, at the Episcopal Hospital, also uses lateral splints, but carries the adhesive plaster beyond the knee to a point just short of the seat of fracture. Dr. Packard, at the Episcopal Hospital, in cases where extension does not overcome the deformity, applies over the seat of fracture, in addition to the usual dressing, short anterior and posterior splints of binder's-board, moulded to the thigh and held in place by a bandage.

Dr. Brinton, at St. Joseph's Hospital, in similar cases, uses binder's-board, or short wooden lateral splints, well padded and applied to the thigh, in addition to the ordinary dressing.

Prof. Agnew, at the Pennsylvania and University Hospitals, in fractures of the upper third of the femur, where there is an upward and inward projection of the lower end of the upper fragment, uses the anterior wire splint of the late Prof. N. R. Smith, of Baltimore. In applying this splint the limb is extended, and a spiral reversed bandage applied from the toes to the groin, the splint being then applied to the anterior surface of

the limb, and fastened to it by means of a second bandage; the limb is then suspended from a frame, fixed over the bed, by a cord attached to the splint. (See Fig. 3.)

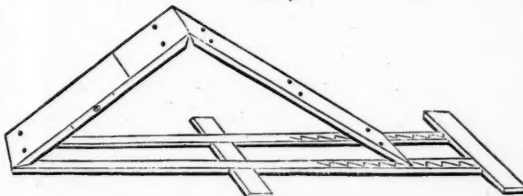
FIG. 3.



In some cases, Prof. Agnew uses the double-inclined plane (see Fig. 4) in the treatment of this fracture. The limb is placed upon the inclined plane, which has been previously well padded; extension is made by broad strips of adhesive plaster fastened to the sides of the thigh and secured by a few circular straps; the extending strips reach from a point just short of the seat of fracture to the knee, and terminate in a stirrup as in the ordinary extension apparatus; a cord is attached to this stirrup, which runs over an elevated pulley, and to this cord the weight is attached. Lateral support is given by short sand-bags placed against the thigh, or by bran-bags held in position by the sides of the inclined plane, on which the thigh rests. These may be hinged like the sides of the ordinary fracture-box.

The treatment of fractures of the femur in children presents some variety of dressing, depending upon the age of the patient. At the Children's Hospital, these fractures in very young children are treated as follows: The limb is extended, and the

FIG. 4.



fragments adjusted as well as possible; a bandage is then applied from the toes to the groin, a piece of binder's-board, long enough to extend from the foot to the brim of the pelvis, and wide enough to encircle the limb and part of the pelvis, is moistened in warm water, padded and moulded to the limb, and held in position by a bandage. This splint, when it becomes dry, holds the parts firmly in position, and permits of the child being lifted to take the breast if necessary.

In older children, the ordinary extension apparatus is applied, and lateral support is given by splints and bran-bags, or by sand-bags, the extending-weight, of course, being proportionally less than that required in the treatment of fractures in adults. In some other hos-

pitals, a flannel bandage is applied to the limb, and a plaster-of-Paris bandage carried up the limb from the toes to the groin, and finished with some turns about the pelvis, so as to fix the hip-joint.

Prof. Agnew, in treating these fractures in children, first etherizes the patient, and extends the limb, then applies a flannel bandage from the toes to the groin, and finishes it with some turns about the pelvis; a long wooden splint, extending from the axilla to the foot, is well padded and applied to the outer side of the limb, and secured to it by a plaster-of-Paris bandage, which is applied from the foot to the groin, and finished with some turns about the pelvis; the upper portion of the splint is fastened to the body by a few turns of a muslin bandage.

Fractures of the condyles of the femur are by most Philadelphia surgeons treated by extension and lateral support by means of sand-bags, the fragment or fragments being fixed by adhesive straps or compresses; or they are treated by placing the limb in a long fracture-box, extending from the foot to the upper part of the thigh, a soft pillow being first placed in the box, and after the limb is laid on this, the sides of the box being brought up and fastened by several strips of bandage, while the fragments are fixed by adhesive straps or compresses.

The application of the plaster-of-Paris bandage as a primary dressing, in the treatment of fractures of the femur in adults, has met with but little favor in the hospitals of Philadelphia.

## MEDICAL PROGRESS.

**TREATMENT OF SMALL-POX BY SALICYLATE OF SODA.**—In the *Bulletin Générale de Thérapeutique* for Nov. 30, 1881, M. DUJARDIN-BEAUMETZ reports three cases of variola in which he obtained the most satisfactory results with the external application of salicylate of soda. In one case of severe confluent small-pox, accompanied by delirium, an ointment of cold-cream, one hundred parts to four parts of salicylate, was rubbed over the parts of the face and body where the eruption was severest; in addition to the ointment, a powder of one hundred parts of talc to six parts of salicylate of soda was dusted over the affected parts. The next day it was found that there was no increase in the size of the pustules, in some suppuration was prevented, and there was not the slightest odor developed. The data are as yet insufficient for any conclusion to be drawn as to the value of this remedy in variola, but its apparent success in the cases reported, particularly its power of destroying the repulsive odor accompanying severe cases, and its harmlessness, should lead others to repeat Dr. Dujardin-Beaumetz's experiments.

**FORCED FEEDING IN PHTHISIS.**—Dr. DUJARDIN-BEAUMETZ in the *Bulletin Générale de Thérapeutique* for November 15, 1881, calls attention to the method of forced feeding practised by Dr. Debove. The patients are fed through a stomach-tube, large quantities of milk, raw meat, fresh eggs, and cod-liver oil, twice a day. Sometimes the stomach is prepared by a preliminary washing, in cases treated at San Antoine by Dr. Dujardin, where symptoms of gastric catarrh are pronounced. Dr. Debove does not practise this washing, but introduces the aliment without any preparation. Dr. Dujardin-Beaumetz's mixture consists of 150 grammes (about 5 ounces) of raw meat, 4 eggs, 1 litre (somewhat more than 2 pints of milk), and he sometimes adds a little salt, cod-liver oil or peptones, the last two when there is no diarrhoea, and when diarrhoea

is present he adds subnitrate of bismuth. It is very remarkable that patients fed in this way are very rarely made sick by the presence of so much material, and, as a rule, digest it with facility. If the stomach has been irritable before, and food has been rejected in the paroxysms of coughing, this no longer occurs, and the nutrition greatly improves. The general condition is also ameliorated. The pulse becomes firmer and less frequent, the cough lessens and the sweats cease. Thus far no change in the pulmonary lesions has taken place, but if such a decided improvement in the nutritive energies persists, the local morbid process, we think, cannot fail to grow better.

This method of treatment is equally applicable to tubercular lesions of the larynx or fauces where deglutition is painful or impossible.

**INJECTIONS OF ERGOTINE BEFORE PERFORMING IREDECTOMY.**—Dr. CH. ABADIE recommends the injection of ergotine before performing the operation of iredectomy or sclerotomy. He believes that by this means the danger of intra-ocular hæmorrhage is avoided.—*Bull. Gén. de Thérapeutique*, Nov. 15, 1881.

**SIMPLE METHOD FOR THE CURE OF OZÆNA.**—Dr. GOTTESTEIN (*Gazz. Med. di Roma*) considers ozæna as a constant symptom of chronic coryza. There is no doubt that, after the interference with the function of the glands, there is a diminution and alteration of the nasal secretion. Part of it, drying rapidly, adheres to the mucous membrane, on which it forms crusts, and it is the decomposition of these which is the cause of the odor. It is, therefore, only necessary that a limited portion of the mucous membrane should undergo atrophy to give origin to an ozæna. In adopting this theory of ozæna, it is evident that there can be no question of radical cure, since it cannot be hoped that the secretion of an atrophied mucous membrane can ever become normally re-established. We must therefore be satisfied with the treatment of symptoms which is the most simple and convenient for the patient.

The author was led by chance to employ the following method, from which he has already, in fifteen cases of ozæna, seen the best results in less than three months.

Dr. Gottstein commences the treatment with a nasal douche, which, by freeing the cavity from its secretions, permits the recognition of the character of the mucous membrane and the extent of the lesion. This is followed by the introduction of a tampon of cotton, 3-5 centimeters long, which should remain in position for twenty-four hours.

About an hour and a half after the introduction of the cotton, there is a little secretion from the nose. When the tampon is withdrawn, the secretion is found to be fluid and without crust or odor. Twenty-four hours can be allowed to elapse between two applications of the tampon. When both sides of the nose are affected, the nose can be tamponed every twenty-four hours on the alternate sides. The tampons cause an artificial contraction of the cavities, and so increase the action of the column of air and facilitate the expulsion of the secretions, which are absorbed as rapidly as they are formed, and their desiccation is thereby prevented.—*L'Union Méd.*, Nov. 27, 1881.

**THE VAGUS AND THE EAR.**—In a series of experiments as yet unpublished, which have been made by M. WIETT on the effects of stretching the pneumogastric nerve in rabbits, the effects on the ear were studied by M. Gellé. He found lesions in all respects similar to those which are produced by laceration of the medulla or irritation of the fifth nerve, hæmorrhages and

suppuration, with destruction or ulceration of the tissues. In one case the mischief was limited to the external auditory meatus, and consisted in a hæmorrhage into the lining membrane and periosteum of the lower wall. In another the meatus contained a still larger clot, and in the middle ear was a quantity of semi-solid creamy pus, which filled the chamber and had escaped into the external auditory meatus through the membrana tympani, which was softened and perforated. The ossicles were displaced with the exception of the stapes. The liquid of the internal ear was bright red in color.—*Lancet*, Nov. 19, 1881.

**OPERATIVE ASSISTANCE IN INFANTILE PARALYSIS.**—Some cases recently operated on by Prof. ALBERT have excited a good deal of interest. Struck by the fact that many subjects of infantile paralysis are condemned to the life-long use of more or less complicated apparatus to compensate for the loss of rigidity in the lower limbs, and that the poor cannot get such instruments, he has attempted to increase the use of the legs by operation. He excises the knee- and ankle-joints, and thus obtains bony ankylosis between the femur and tibia, and tibia, fibula, and astragalus. The rigid lower limbs in walking are swung forward by the adductor and great flexor muscles of the hip-joint, which generally retain or recover their power. This treatment has already been carried out in four cases, and a fifth is now preparing for operation.—*Lancet*, Nov. 19, 1881.

**NERVE STRETCHING IN ARTIFICIAL CEREBRAL PARALYSIS AND CONTRACTURE.**—At the meeting of the Société de Biologie, on November 19, M. BROWN-SEQUARD presented a monkey in whom he had four months before extirpated the motor centre of the left leg, which was followed by paralysis of the left leg, then atrophy and contracture in flexion; the limb also became 3 centimetres shorter. Twenty days before the report was made, M. Brown-Sequard stretched, with a two-pound weight, the left sciatic for five minutes; immediately afterwards the paralysis was increased, but the contracture diminished, and an hour after the experiment the limb had gained a centimetre in length, the next day one-half centimetre, and five days later both limbs were of the same length; the paralysis was also much improved after four or five days. There was then a partial return of the contracture, and the author proposed to again stretch the left sciatic, and report on the result.—*Le Progrès Médical*, Nov. 26, 1881.

**TRANSFORMATION OF ALCOHOL IN THE SYSTEM.**—M. JAILLET submitted to the Société d'Émulation, the results of some recent observations on this subject. He affirms that the blood mixed with a certain quantity of alcohol in presence of oxygen, transforms alcohol into acetic ether, and that the blood globules, as has been stated by Pasteur, is a ferment cell which carries on in an alkaline solution the same process as the yeast of beer. Oxygen absorbed by the hæmoglobin passes to the state of nascent or active oxygen, which is able to oxidise promptly and totally all the alcohol which enters the blood current. His conclusions are:

1. Alcohol ingested by the stomach is in part decomposed by the natural ferments with which it immediately comes in contact (the gastric juice, saliva, pancreatic juice, etc.), aided by the mysterious and destructive action of the liver. From this organ the alcohol passes in venous blood to the lungs, where it is widely diffused, a small quantity eliminated in the natural state, but the principal part is transformed into acetic ether. Finally the oxidation of the alcohol is accomplished in the systemic circulation where the acetates formed are totally burned.

2. When alcohol is absorbed after subcutaneous ad-

ministration, the conditions are changed. The alcohol immediately enters the systemic circulation, arrives at the heart, then the lungs, and as it reaches these organs quickly and in large quantity, it is freely eliminated, as shown by MM. Perrin, Duroy, and Lallemand. Administered subcutaneously, there can be no action of the ferments of the organism; the liver does not affect its disintegration, for the alcohol has meanwhile been imbibed by all the tissues, and is diffused generally, without having been subjected to any modifying influences.

3. Alcohol is a substance which arrests respiration by preventing hæmatosis; in a word, alcohol asphyxiates without being in itself a poison. In the process of its transformation into acetic acid alcohol utilizes the oxygen being conveyed to the tissues by the blood globules, and it thus diminishes combustion in the body. This fact explains its antipyretic action. Death by alcohol is an asphyxia by carbonic acid, and we have found in animals and in man all the symptoms and the anatomical conditions of this asphyxia. It can thus be readily comprehended why alcohol, in the form of vapor, is so much more dangerous than alcoholic drinks, and produces so much more rapidly serious symptoms of poisoning.—*Journal de Thérapeutique*, Oct. 10, 1881.

**PHENOMENAL TEMPERATURES.**—Dr. Mahomed narrated to the Clinical Society of London (*Lancet*, November 5, 1881) the case of a hysterical female who was able to develop, or, at least, register on the thermometer, any temperature desired, 128° F. being recorded in one instance. Indeed, she appears generally to have been limited merely by the length of the scale of the thermometer, the index being usually lodged in the expansion at the top. She was only able to develop these temperatures with registering thermometers in the mouth and axilla, and then only when motion of the arms was not prevented, while surface thermometers gave a normal temperature. Dr. Mahomed remarked that it was easy to send the index of an ordinary clinical thermometer up to the top, in from ten to fifteen seconds, by rubbing it between the slightly moistened finger and thumb, exerting at the same time considerable pressure on the bulb. The same result can be obtained by enveloping the bulb of the thermometer in several folds of silk and placing it in the mouth, and then inspiring by the nose and expiring by the mouth; the result, no doubt, is produced by the evolution of the latent heat of the watery vapor of the breath as it becomes condensed upon the silk. The method used by the above case was not discovered.

In the same journal, Dr. Stephen Mackenzie reports a case of excessively high temperature in a woman who, after puzzling her physicians for some time, confessed that she produced the high temperature by poultices, hot bottles, etc.

**TREATMENT OF HYDROCELE.**—Dr. T. L. OGIER, of Charleston, S. C., advises the injection of about thirty drops of the undiluted compound tincture of iodine directly into the sac of the *tunica vaginalis testes*, without drawing off the effusion, in cases where a radical cure is desired, and where confinement must be avoided. He repeats the injection on alternate days, and states that in sixteen cases this treatment has been followed by the complete and permanent absorption of the fluid without any pain or inconvenience to the patients, and without confining them to the house. During the treatment, Dr. Ogier recommends the use of a suspensory bag, which is to be gradually tightened as the swelling subsides.—*Gaillard's Med. Journ.*, Sept., 1881.

**PROLONGED DILATATION OF THE ESOPHAGUS.**—Dr. M. KRISHABER gives the following conclusions in a recent paper on this subject:



1. The œsophagus will tolerate a bougie for an indefinite period. (He reports cases in which the sound was retained for 305, 46, 165, and 251 days.)

2. The sound should be introduced through one of the nostrils, and not by the mouth.

3. The permanent presence of the sound permits the dilatation of the stricture to a sufficient degree to render the introducing of gradually increasing sizes possible, exactly as is practised in cases of urethral stricture.

4. A gum œsophageal sound should be introduced in the first instance, and, after remaining in place for a few days, should be replaced by a softer and more easily tolerated rubber sound.

5. Feeding is absolutely assured by this method, and false passages, as are apt to be made in intermittent catheterization, are avoided.

6. In cases where the stricture necessitates œsophagotomy, the sound should be placed in position as soon as the incision is made, and allowed to remain, so that cicatrization will occur around it, and obliteration of the œsophagus be prevented.

7. Besides the above-mentioned uses of the sound, it may be left in position for conducting the nourishment of phthisical patients, paralytics, etc.

8. It is also of great use in operations on the face, mouth, and naso-pharynx.

9. In these latter cases, the sound should be placed in position several days before the operation, and allowed to remain until the cure is complete.—*Ann. des Maladies de l' Oreille, et du Larynx*, Nov., 1881.

**THE PARTICIPATION OF THE LIVER IN THE PRODUCTION OF UREA.**—In order to obtain an exact appreciation of the share attributable to the liver in the production of urea, SOLHIKOFF (*Petersburger Medical Wochenschrift*, No. 51, 1880,) conceived the idea of connecting, in large dogs, the vena porta directly with the external jugular by means of a rubber tube, an operation which, when accomplished with due precautions, is relatively well borne. When the communication is established between the venous trunks, the blood-pressure is at first depressed, but soon regains its normal height; but the urinary secretion ceases completely, and does not become re-established until urea is injected into the blood of the animal. The injections of urea cause no elevation of blood-pressure, but may sometimes even produce a depression. Previous section of the splanchnic nerves does not modify these results.

As control experiments, the author connected the crural vein with the jugular, and found that the urinary secretion was not modified. He concludes, therefore, that it is the blood coming from the liver which throws into the circulation the urea which is to be removed by the kidneys.—*Gazette Médical de Paris*, Nov. 12, 1881.

**COMMUNICATION OF SYPHILIS BY SKIN-GRAFTING.**—Dr. DEUBEL communicated the following case to the Société Médical des Hopitaux: A man, aged forty-nine, who had never contracted venereal disease, became, in January, 1881, the subject of gangrenous erysipelas of the thigh, which was attended with a large ulceration, having its starting point in the superficial ulceration of some hæmorrhoids, that, except at some isolated points, refused to cicatrize. On March 7, forty-five dermo-epidermic grafts, furnished by five persons, were inserted, and thirty-three of these contracted adhesions; and twenty other grafts taken from seven persons, aged from twenty to forty years, were placed on another part of the wound on the 23d, thirty of the number retaining their vitality. Grafts from the mucous membrane of the mouth of a rabbit were also employed, and on the 23d of March forty new grafts, taken from persons aged

from twelve to fifty-four years, were applied. Cicatrization went on satisfactorily until April 5, when ulceration commenced in the now almost cicatrized wound where the first grafts had been planted, and soon destroyed the cicatrization. The grafts applied on the second occasion did not ulcerate, but became pale and fell off. The new ulceration had a syphilitic aspect; but the man's wife, who had nursed him, having also been seized with erysipelas which proved fatal, and a lodger suffering from lymphangitis, it was concluded that the whole had arisen from infectious causes due to the very unsanitary condition of the abode in which they all resided. The ulcerations improved on being touched with nitrate of silver, but new ones kept appearing during the next three months, and ten weeks after the first application of the grafts the skin and scalp became the seat of syphilitic eruption, and some weeks later the mucous membrane of the mouth was affected. A mercurial and iodide treatment was put into force, and eight months after the first appearance of the erysipelas the breach of surface became entirely cicatrized. It turned out that a son, who had furnished some of the grafts, was the subject of syphilis.—*Gaz. Méd. de Paris*, Nov. 5, 1881.

**BELL'S INDUCTION BALANCE.**—At a recent meeting of the Académie des Sciences (*L'Union Médical*, Nov. 12, 1881), M. ANTOINE BREGUET read a note from Mr. A. Graham Bell, on an apparatus which may be considered as a modification of the well-known induction balance of Hughes, and which permits of the localization—without pain to the patient, as no sounds are used—of any metallic substance in the body.

The instrument is composed essentially of a system of two flat bobbins, parallel, and so placed one above the other that the border of each lies near the axis of the other. One of these bobbins, wound with coarse wire, is the primary circuit; the other, wrapped with fine wire, is the secondary circuit. The two bobbins are together immersed in a mass of paraffine, and placed in the interior of a plate of wood furnished with a handle. A vibratory current, coming from a battery, traverses the primary circuit, while an ordinary telephone is included in the secondary circuit.

Under these conditions, no sound can be detected in the telephone; but if one brings any metallic substance whatever near the junction of the two bobbins, the silence will be broken by a sound which will depend in intensity on the nature, form, and distance of the metallic body. It may be remarked in this connection, that the most favorable shape of the projectile is that of a flat disk, parallel to the surface of the skin, and the most unfavorable is when the axis of the disk is parallel to the surface.

It is difficult, in practice, to secure the exact adjustment of the relation in position of the two bobbins: it is, therefore, convenient to introduce into the primary and secondary circuit two other bobbins, analogous to the first but much smaller, whose surface of contact can be increased or diminished by a micrometer screw, and the telephone reduced to complete silence. If it is wished to determine the depth at which the metallic body lies, its form, mode of presentation, and substance must first be known. These being known, it is only necessary to throw the bobbins sufficiently out of contact, while applied to the skin, to cause the telephone again to show silence. After that, withdrawing the apparatus, a body similar to the one explored is approached until the silence is again reproduced. The distance at which this occurs in the second instance is the measure for the distance to be determined.

Prof. Bell's note, illustrated with wood-cuts, has also appeared in English in the *American Journal of Science* for Jan., 1882.

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## LESSONS OF THE GITEAU TRIAL.

WITH Giteau and his trial our readers, probably, have had something of a surfeit, but as journalists it is our duty to utilize any aspect of the case which may be of interest. The assassin is a phenomenon—an object of interest alike to the sociologist and to the psychologist. Inheriting with his French name some distinctively French characteristics, and influenced in his moral and mental development by the forces of the social life about him, his present state is a logical outcome, and he is a not inconsistent product of some elements in our American civilization. Vain, egotistical, and ignorant, he received sufficient education to give still more obliquity to his ill-balanced faculties. Bent on making a noise in the world, he tries, in turn, theology, law, politics, lecturing—anything by which he may achieve notoriety and be spoken of by the newspapers. These failing, what expedient more natural than some desperate deed, which will surely cause all eyes to turn on him. He is a type of a class becoming, unhappily, too common. A wild passion for notoriety, the outgrowth of a faulty training, half-education, and a literature composed of newspapers and dime novels, are developing a class of Giteaus which seems likely to become too numerous in this country.

The Giteau trial has awakened renewed interest in the question of the proper methods of utilizing expert testimony. As is usual, we have had exhibited the unseemly spectacle of experts arrayed on the two sides like so many paid advocates. The public, the lawyers, and even the wretched assassin, must be excused if they see in this only a willingness on the part of experts to give testimony on any side to which their interests may incline them. Need

we be surprised that counsel take every opportunity to belittle their attainments and impugn their honesty? This state of feeling was shown in the contest between the attorneys for the prosecution and Dr. Spitzka. Because the latter is a professor in a veterinary college, he was contemptuously styled "a horse-doctor." The sympathy which the medical profession would have for Dr. Spitzka, as an expert of high attainments who had suffered most outrageous indignity from counsel whilst before the court in his proper character, is, unfortunately, destroyed by his treatment of his fellow-experts. To characterize those who differ from him as fools or knaves, is an unwarrantable abuse of his position, and an act of professional discourtesy for which he ought to be disciplined. There is much in the conduct of many of the experts to admire. Some of them came to Washington to testify their belief in the insanity of Giteau, but on a careful study of the criminal himself, they were constrained to form a different opinion, in which all intelligent persons competent to form a judgment will probably concur. It is much to their credit that they were not afraid to change their opinions. Far different was the conduct of Dr. Spitzka. Making up his opinion in advance from insufficient data, he adhered to it with unreasoning obstinacy, and illustrated the nature of his mental processes by assuming his own infallibility, and condemning those as fools who ventured to express opposite opinions.

## CRANIOLOGICAL CHARACTERISTICS OF ASSASSINS.

AN expert for the defence in the Giteau trial has enlarged on the importance of certain cranio-logical peculiarities of the assassin's head. The technical terms in which Dr. Spitzka defined and classified the malformation astonished the reporters. Our lay contemporaries, on a sudden, have taken to the discussion of cranial topography, but the most important contributions are made by the hatters, who, producing their charts, have disclosed to us how many of our reputable citizens should, if their cranial conformation is to decide, be assigned to the gallows or to a mad-house. The hatters say that symmetry of the head is rather exceptional and abnormal, and that even considerable deformity is not incompatible with the possession of superior powers of mind.

It is very satisfactory, at this juncture, to be able to call in for examination some independent and unbiassed testimony. Whilst discussion is going on over the head of the wretch Giteau, a valuable contribution to the cranial characteristics of assassins has appeared in the *Revue Internationale des Sciences Biologiques*, No. 11, by MM. Heger and Dallemagne. Their study is based on a series of assassins executed in Belgium, who do not constitute a species

apart from the type to which they belong, say these authors. The lack of resemblance in the crania of the different series of assassins conducts them to the conclusion that it is impossible to formulate a theory of the craniological characteristics which will include them. On the other hand, the study of these characteristics has demonstrated that amongst assassins there are many whose cranial conformation reveals mental inferiority.

Thus it appears that, in the present state of knowledge of the subject, it is hazardous to draw conclusions from the cranial conformation. Although general conclusions may be drawn from the shape of the head in regard to the mental power of individuals, the facts do not warrant the attempt to define the characteristics belonging to assassins. The subject of cerebral localization is not in a sufficiently advanced state to permit even an approximate representation of the parts of the brain purely intellectual in function, and of those devoted to the moral or affective faculties. How much more obscure the subject, when the surface topography of the cranium enters into consideration! It is, of course, perfectly well known that the protuberances and depressions of the exterior are imperfectly, or not at all, represented within—a fact which constitutes an insuperable objection to the doctrines and the localizations of function put forth by the phrenologists.

#### ARE THERE STRICTURES OF LARGE CALIBRE?

A RECENT writer, entitled to speak with authority, asserts that gonorrhœa, by reason of its great prevalence and of its remote effects, is the most prejudicial to the public health of all the venereal diseases, not excluding syphilis. This is contrary to the commonly received view, and may be rather too broad a statement; but, unquestionably, of late years the disease has assumed an increasing importance, as the constant pathological results of continued irritation of mucous passages, the reflex symptoms and ailments produced by interference with the genito-urinary tract, and the changes undergone by the bladder when its long accustomed work is notably increased, have been more fully and thoroughly recognized.

Accurate statistics on such subjects are necessarily unobtainable, but the course of reasoning which results in the conclusion above stated may be outlined as follows:

A very large percentage of adult males have been at some time the subjects of acute urethritis; in two-thirds of these the disease has been several times contracted, or has on at least one occasion run a protracted course; persistent irritation at any given point in the body results in an increase of the fibrous tissue in that region, associated

with a deposit or development of new tissue of a similar character; this is especially true of mucous and submucous surfaces. Such a deposit occurring beneath the mucous membrane lining the urethra, interferes to a greater or less extent with the lumen of the canal, and thereby constitutes a stricture.

If a current of liquid be passed along a tube, a certain degree of friction proportionate to the amount and velocity of the current and the size of the tube takes place between the walls of the latter and the liquid; if the tube be narrowed at any one place, the friction is increased at that point, and, to avoid a notable diminution in velocity, the propulsive force behind the liquid must also be correspondingly increased.

Habit is a powerful agent in facilitating and governing the functions of animal life; in the case of a young adult, the bladder has, during twenty-one years, gradually accommodated its efforts and its powers to overcome a certain average amount of resistance. This equilibrium or balance between its expulsive force and its work, the result of thirty thousand distinct acts of micturition, taking an average of four daily, cannot with impunity be disturbed. The very moderate amount of prostatic enlargement which often suffices to bring on vesical troubles is an illustration of this fact.

The increased friction and resistance resulting from even a slight fibrous peri-urethral deposit disturb the normal relations of the bladder, and, by rendering it irritable, bring on one of the common symptoms of stricture—frequent micturition. The imperfect closure of the tube, the muscular action of which, at the point of deposit, is materially interfered with, causes the equally imperfect expulsion of the last drops of urine, and produces another characteristic symptom—dribbling at the end of micturition. The retention and decomposition of these last drops, together with the abnormal friction between the stream of urine and the urethral walls, give rise to a sub-acute inflammation of the mucous membrane, accompanied with a catarrhal or mucopurulent discharge, constituting the well-known condition of gleet; by reflex irritation transmitted from the area of inflammation, pains are developed in remote situations, notably in the lumbar and hypogastric regions.

We have, then, a group of symptoms apparently resulting from a sub-mucous urethral deposit and sufficiently characteristic, to wit: frequent urination, dribbling at the end of the act, gleet, discharge, and certain aches or dull pains in the small of the back or over the pubes.

The relation between these symptoms and the general physical and physiological laws which have been alluded to, however crude it may appear as here briefly sketched, has been in the main accepted



as correct by the profession for many years. Probably no one would deny that in certain strictures in which the urethral calibre is markedly diminished, the connection between the pathological changes and the observed indications is about as has been stated. The differences of opinion which now exist are chiefly as to the *amount* of urethral contraction which is sufficient to produce noticeable results, and here the argument must rest upon clinical observation supported by the results of autopsies. That every urethral coarctation must at some time have been a "stricture of large calibre," is a self-evident fact; and that the tendency of all such strictures is to gradually diminish the size of the urethra, and to interfere with its dilatability, is equally clear from the well-known proclivity of cicatricial tissue, wherever found, continuously and steadily to contract. This is no more and no less noticeable when that tissue is situated around the urethra than when it occupies the intertubular spaces in interstitial nephritis, strangulates and destroys the parenchyma of the liver in cirrhosis, produces induration and bronchiectasis in chronic pneumonia, or in any of the many possible directions exerts its power in the production of disease. Although, as has been said, the exact degree of contraction which renders it an active pathological factor in urethral cases is undetermined, it may yet be safely asserted that there are few surgeons at the present day who would agree with Sir Henry Thompson in the belief that the easy introduction into the bladder of a sound eighteen or nineteen millimetres in circumference is sufficient to demonstrate the non-existence of organic stricture. Indeed, the observed variations of the normal urethra are such that no special dimensions can be assigned to it as representing the precise dividing line between health and disease; the old method of regarding the size of the meatus as an indication of the normal calibre of the canal behind it being unquestionably fallacious, it having been conclusively shown that no definite relation exists between them. On the other hand, it has also been shown that there are usually certain normal variations in the calibre of the urethra, even in the spongy portion, which is now claimed with much show of truth as the most frequent seat of pathological contractions, and that it is impossible, with any of the means at our command, to distinguish between these natural irregularities and coarctations of equal calibre due to incipient strictures. The great importance of bulbous bougies in detecting, measuring, and locating stricture has, however, been more fully recognized than ever before, and coincidentally the unfitness of the ordinary steel sounds for the same purpose, by reason of their weight and their conical shape.

In conclusion, it may be said that, although our

knowledge is insufficient to determine in every case the exact nature or pathogenetic value of any given slight diminution in urethral calibre unattended with symptoms, we have yet abundant evidence, clinical and post-mortem, to enable us to advance, with little risk of contradiction, the following propositions, applicable to the vast majority of cases:

A patient who, after an attack of gonorrhœa, develops any or all of the above-mentioned symptoms, has in all probability a commencing stricture.

If a careful examination with a bulbous bougie reveal any constriction other than the one at the triangular ligament, which is known to be normal, it may with confidence be considered as due to a fibrous deposit in the sub-mucous tissue, and the symptoms may be referred to it.

This condition, though yielding readily to proper treatment, is, if neglected, productive of serious consequences, which, in exceptional instances, may even imperil life, through continuous irritation of that portion of the genito-urinary tract posterior to the contraction.

Such sequelæ are to be expected in a large proportion of cases of long-continued or oft-repeated gonorrhœa, are possibly even numerous enough to justify the assertion quoted at the head of this article, and, at any rate, in view of their extreme frequency, demand the thoughtful consideration of the profession.

#### COMPULSORY VACCINATION.

THE very general prevalence of small-pox throughout the country is naturally directing attention to the means of its prevention. No one at the present day can plead ignorance of the protective power of vaccination when properly performed; and it is therefore surprising that, in the very face of danger, the proportion of the inhabitants of every community who have not availed themselves of this proved means of safety remains a very considerable one. How to secure universal vaccination, or, in other words, how to prevent the repeated incursions of epidemic small-pox, is a problem which at this time deserves most serious consideration. Its solution would seem to lie in a successful effort to make vaccination compulsory either by fine or by imposing disabilities for its non-performance. This latter plan has already been adopted to a considerable extent, but its availability must necessarily be limited; and it would therefore appear that nothing short of direct compulsion by law will secure the desired result. Compulsory vaccination has never been adopted in this country to any great extent, but there can be no valid reason why the American people should hesitate to sanction a measure which, if wisely enacted, would redound to the benefit of the whole country. The idea of its conflicting with

the right of unmolested enjoyment of personal liberty, is pure sentimentalism. The liberty to spread disease by neglecting or refusing to observe the means of prevention known to be safe and efficient, and which is within the reach of every one, is a liberty which should be abridged by the enforcement of wise laws.

Already there can be discerned, in recent legislation on the subject of vaccination, the evidences of a better appreciation of the importance of this question. The National Board of Health have adopted the following rules, in conformity with the provisions of the act of June 2, 1879, to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, and from one State to another, which rules were approved by the President, November 11, 1881, and are now in operation, to wit:

1. That all persons coming from or through any foreign port or place in which small-pox exists, who, after the 14th day of November, 1881, shall arrive at any port of entry within the United States, shall be subjected to examination as regards their protection from that disease by the proper health authorities of the State within which such port lies, or in case such authorities shall fail or refuse to enforce this rule, then by some officer or other proper person, to be designated by the President of the United States.

2. That in case any person so arriving shall refuse to submit to such examination, or upon undergoing the same shall be found not sufficiently protected from small-pox, such person, and in case he or she be not *sui juris*, then also the person having him or her under charge, shall be detained in quarantine until he or she shall have been properly vaccinated, or shall have passed the period of incubation from date of last exposure.

Still more recently, the City Councils of Richmond, Va., have passed an ordinance requiring the immediate vaccination of all residents who have not been vaccinated within the past twelve months, "except in such cases as any regularly licensed physician shall declare it to be injurious or unnecessary." Its violation is made punishable by fine. The ordinance is not so complete as it might be, and bears evidence of hasty preparation, but the effect of its passage cannot be otherwise than beneficial. If a like energetic and radical crusade against small-pox were undertaken throughout the country, this disease would soon cease to commit the ravages which are now, unfortunately, of very common occurrence.

#### THE PROSECUTION OF DR. FERRIER BY THE ANTI-VIVISECTION SOCIETY.

THE Secretary of the Antivivisection Society in England, Miss Frances Power Cobbe, has been very active in denouncing the vivisectionists since the

failure to convict Dr. Ferrier. She is not sparing in her abuse of the medical profession, also. As is not unusual, the zeal of these pretended humanitarians quite outruns their discretion. Dr. Ferrier was dragged before the police court for a violation of the vivisection act, as will be seen in our London news, when the supposed offence was committed by Dr. Yeo, who had a license in proper form. The expense and trouble suffered by Dr. Ferrier on account of the misdirected zeal of the Society, for which they offered no excuse or apology, has had the effect of increasing the dissatisfaction felt in the operations of the vivisection act. In an interesting letter to the *New York Tribune* from its London correspondent, we find a calm and judicial statement of the vivisection question, and an account of the injury done to scientific work—at least on the physiological side—which has been for the most part suspended. The correspondent shows that the abusive communications printed by Miss Cobbe, and the bad effect of the vivisection law in stopping original researches in England, are stirring up an opposition to this intemperate law, which will probably result in its modification. It is a hopeful indication when such an intelligent and appreciative discussion of the subject appears in a daily paper from its London correspondent.

#### THE VIVISECTION LAW AND THE CHINESE OPIUM TRAFFIC.

It is not possible to reconcile the humanitarian sentiment of the English which has suppressed vivisection as a means of scientific research and that aggressive self-interest which has forced the opium traffic on China. The members of Parliament who enact laws against experimentation on animals for a scientific purpose, will shoot pigeons in hundreds on a wager, and pursue birds and beasts to death for mere sport. They, further, protect animals for their own sports by stringent game laws; and force opium on the poor Chinese to keep up the revenues of India. In the issue of the *Medical Times and Gazette* for December 10, 1881, we find an article on the opium traffic, in which a defence of the British policy is implied in the arguments for the use of this drug.

It appears there are 2,000,000 of Chinese who expend a daily average of 5*d.* to 11*d.* (10 to 22 cents) per person for smoking opium. The annual expenditure of China for opium is £25,000,000 (nearly \$125,000,000), one-half of which is obtained from India. The traffic is justified on the following grounds (having been forced on China by the bayonet):

"Opium has a dietetic as well as a medicinal value. It is customary for the reformers of society, with reference to this drug and alcohol, to bracket them together in one sweeping condemnation; but,

while the latter is simply a temporary stimulant, for which there are substitutes equally powerful, though not so pleasant to swallow, the former tranquillizes, arrests waste of tissue—being in this respect to the poor Chinamen what tea is to the same class in the United Kingdom—and in time of famine takes the place even of food; to say nothing of its incommutable value as a medicine. Its reception into the heart of society is too universal and deep for Acts of Parliament or imperial decrees to be efficacious in preventing its consumption." And yet we are told in another part of the same article, "it seems at first sight somewhat remarkable that, because two-thirds of one per cent. of the 300,000,000 of the people of China choose to consume opium—some only of these to an immoderate extent—the well-wishers of the country should so earnestly desire to do away with the consumption of the drug altogether."

#### FIRE-ESCAPES FOR HOSPITALS.

THE recent fire in a Philadelphia mill, which caused so fearful a loss of life, from want of any fire-escapes, should call the attention of all our hospital authorities to the need for fire-escapes. If they be necessary in mills, hotels, and other buildings in which the active and the well are employed, the need is far more pressing for numerous escapes in buildings in which many if not most of the inmates are to a certain extent disabled. The absolutely helpless could scarcely escape even with assistance, but we should beware of penning up patients who are not bed-ridden, without sufficient means of escape, in third and fourth stories, all ready for a horrible holocaust. We are glad that in Philadelphia the Mayor and the City Councils are moving in the matter, and we trust that our hospitals, not only here but everywhere, will act cordially, quickly, and efficiently.

If our City Fire Departments had suitable mattresses to carry quickly to fires, or stout sheets, as it seems were used in Vienna in the fire at the Ring Theatre, either of which would break the fall for those who must jump, they would often have a valuable means of saving life.

#### SIR JAMES PAGET, BART.

SIR JAMES PAGET's many friends and admirers on this side of the Atlantic, will learn with regret that at the end of November he was confined to his bed by an attack of pneumonia, similar to other seizures previously experienced by him since he suffered from blood-poisoning. We are happy to be able to state that at the latest accounts he was decidedly better and had gone to the south of France to recuperate his health.

## REVIEWS.

MR. SPENCER WELLS'S NOTEBOOK FOR CASES OF OVARIAN AND OTHER ABDOMINAL TUMORS. *Sixth Edition.* London: J. & A. Churchill, 1881.

To surgeons who practice ovariectomy and abdominal surgery Mr. Wells's notebook is of great service. He who follows it cannot avoid making, what is absolutely essential in cases of abdominal growths, a careful examination, and careful examinations lead to correct diagnoses. The plan of the notebook is such as will obtain, under proper headings, a complete history of each case, with record of diagnosis, prognosis, treatment, medical or surgical, and results of treatment.

One or two points, in the examination of the pelvis, are worthy of special note. First, that in cases of probable pregnancy the sound should not be used to ascertain the length of the uterine cavity, and, second, examination of the uterus by the rectum affords much more information than is commonly supposed. This method of examination should always be employed in conjunction with those which it may be deemed safe to make.

In this edition, the sixth, the author adds a note as to the antiseptic precautions he has employed in his later operations. In January, 1878, he began to employ the complete antiseptic system, and from that date to the issue of the edition, April, 1881, he performed 137 operations, with 13 deaths—a mortality of 9.4 per cent. He states, as his belief, that "this diminishing death-rate is mainly due to the additional antiseptic precautions." This conclusion will be accepted, it is believed without question, by surgeons in this country who have performed ovariectomy under the old and new methods.

ANTISEPTIC SURGERY. By Dr. JUST LUCAS-CHAMPIONNIÈRE. Translated from the second edition by FREDERIC HENRY GERRISH, M.D. 4to, pp. 239. Portland: Loring, Short & Harman, 1881.

The student who desires to learn the antiseptic theory, the preparation and application of the Listerian dressings, and the adaptation of the system to all sorts of operations and all regions of the body, will find in this book a satisfactory guide as far as the subject can be treated in so brief a space. That the author has the courage of his antiseptic convictions, is proved by the fact that, even in obstetric patients upon whom he has operated, he allows his class of students to make daily vaginal examinations, and his internes to dissect and make post-mortems *ad libitum*, provided they use antiseptic precautions. In spite of this, too, his mortality has been very low. As a commentary, not very flattering to the administration of French hospitals, on page 175 (the appropriate "running title" of which is "a plea for cleanliness") he states that "in Paris all the habits of the students are in need of reform. I do not blame them; it is physically impossible for them to be surgically neat in the hospital. . . . At present not only is nobody compelled to wash his hands, but it is almost impossible to do it in a hospital, so poor are the facilities."

Dr. Gerrish has translated the book admirably; in fact, it can scarcely be discovered that the book is a translation. But we are disposed to take exception to the use of so rare a word as "germ-bearing *epithem*" for "application" or "dressing," and still more to the imported phrase, especially affected by many of our German scholars, "to make an operation." Dr. Gerrish even goes farther, and speaks of "making sutures."



## SOCIETY PROCEEDINGS.

## NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, January 5, 1882.*

FORDYCE BARKER, M.D., PRESIDENT, IN THE CHAIR.

The annual election resulted as follows: For Vice-President, H. T. Hanks, M.D.; for Trustee, C. Fayette Taylor, M.D.; for Member of Committee on Admissions, J. E. Janvrin, M.D.; for Member of Committee on Ethics, Chas. A. Leale, M.D.; for Member of Committee on Education, F. A. Burrall, M.D.; for Member of Committee on Library, J. C. Peters, M.D.; for Delegates to Medical Society State of New York, Drs. A. M. Jacobus, L. Elsberg, C. C. Lee, Everett Herrick, F. A. Birdsall.

The scientific paper of the evening was by SAMUEL SEXTON, M.D., and was entitled:

*The Treatment of Diseases of the Middle Ear and Contiguous Parts by Milder Measures than those Commonly in Vogue.*—The author avoided such details as were only of interest to otologists. The causes of suppurative diseases of the ear were arranged under three heads: first, nervous sympathy, as from dental or uterine irritation; second, extension of catarrhal inflammation from the naso-pharynx through the Eustachian tube to the ear; and third, mechanical or direct influences, as the entrance of water in bathing and the use of the nasal douche. More than one of these causes might be active at the same time. His experience had been, that among adults the graver cases occurred more frequently in males. Of such cases one-half were consecutive to acute attacks. Among children, it was his impression that the graver cases occurred more frequently in females. Many cases of acute aural catarrh ran a mild course. The secretions of the middle ear were slight in quantity, and could escape through the Eustachian tube, or where this was not possible an outlet was afforded by the rupturing of the drum-head, which healed up very rapidly under favorable circumstances. If such simple cases, however, were treated by violent measures, such as leeching, blistering, and untimely incision of any of the tissues about the ear, or by vigorous inflations of the tympanum, they might take on a severe form of inflammation, and adjacent structures might then rapidly become involved. He would not dogmatically assert that all cases thus treated would take such a course, but he was fully convinced that in a large number of instances the cases would do better without them, and many times they did much harm. In a certain number of cases, an untoward course might be expected from the beginning of the attack.

The extension of this affection to contiguous parts, was divided for convenience of description, as follows: 1, Catarrhal inflammation of the air-cells of the mastoid; 2, Periostitis of the external auditory canal; 3, Periostitis externa. An extended account of the etiology, symptoms, and pathology of inflammatory conditions extending to parts contiguous to the middle ear, was given. It was thought that a differential diagnosis of the invasions of these conditions, and a knowledge of the diagnostic value of pain as a symptom, would do much towards a more rational treatment of aural diseases. The diagnosis of simple hyperæmia of the mucous lining of the mastoid air-cells was difficult, as the symptoms were not always different from those of middle-ear catarrh, but when the mucous periosteal lining was attacked there would be an increase of pain. The attack might be ushered in by chills, and the temperature and pulse, in severe cases, would be characteristic of acute inflammation, and the pains would be

non-paroxysmal. The degree of pain was not always indicative of the gravity of the disease. Inasmuch as acute middle-ear inflammation was liable to take on a severe form, it was desirable to prevent this by treatment, and it was thought this could be done by milder measures than those commonly in vogue. It was commonly believed that syringing and poulticing were harmless. Both were liable to a great deal of harm, and the relief afforded by leeches might be more than compensated for by the irritation caused by their sharp bites, and the bungling efforts made in stopping bleeding after they dropped off. The large coagula entangled in pellets of cotton-wool used to arrest hæmorrhage, were also liable to irritate the parts, especially in children. Blisters and the tincture of iodine applied over the mastoid, or in front of the ear, were not without their evil effects, and instillations of astringent injections were often very injurious. Inflations of the tympanum were sometimes both painful and harmful. The propriety of attempting to increase the acuteness of hearing in any acute case, was questioned. These procedures might transform a simple acute, purulent inflammation of the middle ear into one of more or less severity, or, at least, protract the disease very much.

Some years ago certain neglects on the part of patients, and certain accidents led Dr. Sexton to make observations in regard to the efficacy of milder measures in the treatment of these cases than those commonly used. Pursuing this line of study some general or constitutional remedies were brought to his notice, the use of which had been very satisfactory. Rest was important; that is, the inflamed organ should be but little disturbed by local applications at first. If the patient was seen before the ear discharged, and the drum-head was found inflamed, but not greatly bulged out by pressure of secretions, it should not be subjected to any treatment whatever. If thickened and more resisting and violently distended, the question of paracentesis presented itself. Under these circumstances he had been accustomed to give the patient the benefit of the doubt, when any existed, and upon the whole, he had not regretted the postponement of the operation. It was well known that the drum-head gave way, when not thickened, without any one being conscious of the fact, before a serous discharge appeared. Even in adults the operation was not always easy to perform, and in weak and debilitated persons, and especially in children, an anæsthetic was usually required. He was not in the habit of performing the operation without getting a good view of the drum, for when there was swelling of the inner extremity of the external auditory canal to such an extent as to prevent inspection, we were warranted in concluding that the pain depended upon other causes than distention of the membrane, namely, an inflammation of the periosteal coat of the canal. When the ear began to discharge, gentle wiping with absorbent cotton-wool was preferable to syringing. Later, when the secretion became more viscid, syringing was sometimes advisable in order to cleanse the canal. In the meantime attention to remote influences was demanded, otherwise the local treatment would be ineffectual. In the beginning, when the discharge was slight, boracic acid with calendula, was sometimes most efficacious. It was applied in the dry state, a small quantity being introduced and allowed to come in contact with the drum-head, and there remain until carried away by the discharge, when it should be re-applied. When the discharge was excessive this was still beneficial but not so satisfactory. In the author's experience the healing effect of this preparation had been very well shown. By such measures patients would sometimes get well in a week, or less time. In the greater number of cases recovery did not take

place so rapidly, and constitutional treatment would be required.

There were some remedies which had not been generally adopted in the treatment of aural inflammation that had, in his hands, proved to be of great value. One of the most important of these was *calx sulphurata*, or sulphurated lime. Dr. Sexton first used this some six years ago in furuncular disease, and the results were so gratifying that he published them in the *American Journal of Otolaryngology* for January, 1879. Experience had confirmed the statements then made. He had found it to exert a more favorable influence over acute aural inflammations than hitherto obtained by any other treatment. After explaining the action of the remedy, he stated that he gave it in doses of one-half grain, repeated every three or four hours, and seldom found it necessary to increase the dose. A smaller dose was sometimes preferable, especially in children. He preferred to use it in the form of gelatin-coated pills, unless it was desirable not to administer a pill, or when a smaller dose was indicated. For this purpose the triturations of "*hepar sulphur*" of the homœopaths were satisfactory. So gratifying had been his results in the use of this drug, that he had not felt called upon to leech patients for years, however severe the inflammation. He was rarely obliged to use the knife for the relief of inflamed tissues anywhere about the ear, unless for the evacuation of large collections of pus already formed.

In periostitis externa, where pus threatened to form, he regarded the usual operation of cutting down to the bone, for the relief of this condition, as not only unnecessary for the cure, but also a cruel infliction on the patient, and likely, in many instances, to aggravate existing conditions. The early use of calcium sulphide usually relieved all symptoms very promptly. Sometimes, though the inflammation yielded, the pains continued. They were not constant, were worse at night, and seemed best borne when the patient was sitting up or walking about. For the relief of these pains there were several remedies which should be tried before resorting to the use of powerful anodynes, such as morphia. The latter, when employed excessively, interfered with nutrition. The remedies alluded to were aconite, gelsemium, and pulsatilla. These might be employed in varying quantities from a drop to a minute portion of that dose, given every few minutes, or every few hours, according to the age of the patient and the urgency of the symptoms. Pulsatilla seemed to act best in acute aural disease of children. The effects of the other two drugs seemed to be about the same, though it would sometimes be found advantageous to give one first and afterwards the other. When the inflammation extended to the cells of the mastoid, the effect of sulphide of calcium was most beneficial. When used early, the more serious consequences of inflammation were not often observed. He had never been obliged to employ the trephine, nor had he ever seen any results that caused him to regret that this radical procedure had not been adopted. He thought, when periostitis externa was attended with much pain, that patients were sometimes subjected to unnecessarily severe treatment—to operations which neither always relieved the pains, nor prevented brain trouble. The existence of pain was not always sufficient to indicate the necessity of trephining, for it was not always pathognomonic of extension to the brain. The results of this operation were by no means as harmless as one might be led to think from its simplicity. Dr. Sexton thought the operation had been needlessly performed in many instances. It was difficult to understand how pain could always be relieved by it, especially when cerebral disease arose from direct transmission from the middle ear, or from previous absorp-

tion from mastoid disease; and when neuralgic pains had their origin in other parts, relief was always improbable. No necessity for considering the advantages of the operation had arisen in his own practice. In caries of the mastoid cells, it was important to maintain a free opening, and to remove loose sequestra.

Dr. C. H. BURNETT, of Philadelphia, being introduced by the President, and requested to open the discussion, remarked that he could endorse all the author of the paper had said, in so far as his experience went. There were some points mentioned, however, in which he had no experience. Many times neuralgic conditions might be mistaken for inflammatory conditions. He had seen some cases in which, when the surgeon came to operate, there was added to the original complaint, an artificial disease, if he might so speak, as a consequence of the operation. These were probably among the most important cases of aural disease with which we meet. Dr. Burnett had had an opportunity of studying the natural history of mastoid disease, both when it was allowed to run its natural course, and when it arose from traumatic influences. As an example of the first class of cases, he would cite one which came under his observation several years ago. He was asked to see a physician, having what he thought to be middle-ear disease. None of the five physicians present were willing to operate. The patient was recovering from pneumonia, and complained of pain and deafness in one ear. Upon inspection, the drum-head was found to be bulging, and he thought required incision. The patient begged off for a day, and on the next morning it was found that perforation had taken place, which resulted in an amelioration of these symptoms for a time; but afterwards, the more severe symptoms of mastoid disease developed. The speaker was absent from the city several days, but from the attending physician, and from carefully-kept notes by the patient's wife, he learned that the case had passed through the regular course of mastoid disease. No operation was done further than keeping the membrana tympani open by frequent punctures, as requested by the patient. Finally there was a discharge of purulent matter, such as is frequently found coming from the cortical cells through the mastoid portion. The probe revealed an entrance into the cavity an inch and a half from the point of its insertion; it passed through bone. This was a case which was not operated upon, though it perhaps should have been. Dr. Burnett thought the patient recovered by a process of natural relief. He was now perfectly well, and had no trouble in his ear. Another case, not so severe, was detailed. A gentleman, after bathing, gave evidence of inflammation in the tympanic cavity, and of mastoid disease. The drum-head was opened, and a little mucus came out, but there was no relief of pain. Wilde's operation was suggested, but owing to the miscarrying of messages, the case was not seen for several days, and the patient recovered without operation.

As an example of cases arising traumatically, he would cite the history of a young man in the Presbyterian Hospital in Philadelphia. The patient was twenty-four years of age, and was a brakeman. He was found in the car in an insensible condition, with an extensive injury of the left ear. There was an immense wound, extending through the auricle and mastoid canal, and there was facial paralysis. At the end of two weeks he suddenly recovered consciousness, but the paralysis remained the same. He complained of intense headache upon the left side, which was the injured side. The wound was an inch and a half deep as viewed from the auricle, and one could look through the large opening into the mastoid cavity. A piece of bone, evidently a mastoid sequestrum, was taken out. The wound healed rapidly, and the hearing became

very good, though not quite normal; but the facial paralysis remained unaltered. The piece of bone was taken out behind the auricle, and was evidently a piece of the posterior wall of the auditory canal. Running through it was a canal, evidently a portion of the facial canal somewhere above the mastoid foramen.

The speaker had never used sulphide of calcium except in one case of furuncular disease of the ear, occurring in a strong, robust man of thirty years of age. In this case entire cessation of local treatment was recommended. The patient recovered, and had no further recurrence of furuncles. He believed, however, as stated by the essayist, that in this substance we had a valuable remedy as a resolvent. He wished to inquire whether the administration of this drug should be confined to those patients who were of full habit, or whether it was to be given as well to cachectic and debilitated subjects.

Dr. ROOSA remarked, that he found nothing to criticize in that portion of the paper which treated of the etiology of aural diseases, except, perhaps, that the author laid more stress upon reflex influences than most aurists did or had done. He considered the recommendations in regard to the treatment of necrosis and removal of granulations to be sound surgical practice; but with regard to all the rest of the paper—with regard to the administration of the sulphide of calcium, pulsatilla, and abstinence from surgical interference—he was so impressed with the unsoundness of the essayist's doctrines, that he felt some embarrassment in speaking. He had been taught that free vent should be given to pus, that swollen and inflamed periosteal tissue should be incised, and he had found in his practice that this teaching was correct. As regards the action of sulphide of calcium, he had tried it in circumscribed inflammation of the external auditory canal, and in diffuse inflammation, but he had never known it to influence the progress of the disease. He had never dared to try it in acute tympanic inflammation. He would endeavor to formulate the principles of practice to which he still adhered, and which he had already expressed in a public way, and which he did not believe had been overturned. Given a red membrana tympani, a *serious* pain referred to the ear, he believed that unless speedy relief was afforded by the warm douche, there was no remedy to be compared, as yet, to leeches. He believed if the drum-head be bulging, it was much safer and quicker, although many patients got well without it, to incise it with a needle. He admitted that there were mastoid inflammations that needed no incision. He remembered an instance of this, where he was somewhat reluctantly persuaded to defer operating for a short time, and the patient recovered in a few days, but this class of cases was very limited. He was very far from thinking that every case of aural disease was to be attacked with leeches and the knife, but he did believe there were many cases in which local antiphlogistic measures, and the use of the knife were required. He found a marked resemblance between the recommendations contained in the paper and the teachings of homœopaths; they might be correct and they might be wrong. As yet, he could not believe that the principles of surgery had been turned upside down, as it seemed the essayist thought, inasmuch as he did not now see cases which required the use of leeches and the knife. He would state further, that he knew of many instances of patients having been treated with the sulphide of calcium, and who had finally been obliged to resort for relief to leeches and the knife.

Dr. O. D. POMEROY thought almost as Dr. Roosa thought, and differed almost totally from the author of the paper. He could hardly speak without heat, in attempting to combat propositions which seemed so extraordi-

nary and monstrous, to wit, the non-opening of abscesses, the non-use of morphia to relieve pain, and the non-use of measures for the unloading of engorged blood-vessels. These well-established surgical principles seemed, according to the author of the paper, to have become of very little, if any use. The doctor had spoken of leeching as a violent measure, and likely to do harm. Leeching need not be a violent measure, and American otologists did not put six or eight leeches upon the ear. They had found one or two to be sufficient, so that the plea of depletion from their use would not do. In regard to the leech-bite, he would say that he thought it was clean cut, harmless, and almost painless. He thought the essayist was right in saying that harm might be done by bungling efforts in arresting hæmorrhage after leeching. He had observed this in several cases, and even applied leeches himself to avoid it. If there was decided acute hyperæmia of the tympanic cavity without any relaxation of tissue, the leeching could not possibly do harm. When hyperæmia of the tympanum was associated with passive congestion, he had known a dragging pain to follow leeching. This, he thought, was due to drawing blood from neighboring parts, but this was only a theory. Such pain, however, could at once be relieved by opium. He had himself had otitis too many times not to be conscious of the complete, speedy, and welcome relief afforded by leeching and opium. He wanted to say something about syringing. He admitted, if plain water (unsalted) was thrown into the tympanic cavity, it might do harm, but when the ear was properly syringed it could do no harm. The mildest application of cotton to the ear might produce worse results than proper syringing. In acute inflammation of the tympanum, when there was an excess of pressure and soreness, inflation caused pain and aggravated the case, and ought not to be done. But in acute inflammation, the drum might be quite sunken, and would require inflation. In chronic conditions, inflation was practised as a matter of course. Some years ago he published a paper bearing upon the question, as to whether redness of the drum membrane was evidence of inflation. He found, after many experiments, that in some cases there was redness of the drum membrane produced, and in others not. Hence, as there was a certain degree of violence in inflation, it should only be used to the extent necessary to keep the hearing up to the highest pitch. He believed he had not done Wilde's operation in over a year, and thought it rather unnecessary and cruel. Many times when the mastoid was red and swollen, and pitted on pressure, he relieved this condition by leeching. The essayist had found it advisable, in most cases, to postpone paracentesis, and when performed in nervous patients, or children, that an anæsthetic was necessary. Dr. Pomeroy thought that the point raised by Dr. Roosa in regard to this matter, was absolutely impregnable. He considered the operation simple. It might be done every day or two, if necessary, as Dr. Burnett has suggested. Except in the children, he thought an anæsthetic unnecessary. He was astonished almost beyond limit, by the author's statement that he had not resorted to the use of leeches in acute inflammation, for two years. He knew that much might be accomplished by other means, but it seemed impossible for him to handle certain cases without them. The essayist had spoken of frequent relapses. The speaker was in the habit, under such circumstances, of leeching his patients repeatedly. He remembered a case of catarrh of the Eustachian tube. The patient had a heavy, dull pain. He was leeches once in three or four days, and every time the hearing came up almost to the normal point. He had never used the sulphide of calcium. His assistant, however, had repeatedly employed it, and had found it to be of no avail whatever.



Dr. DAVID WEBSTER thought his own experience, for the most part, coincided with that of others, as recorded in books, namely, that these cases of chronic suppuration of the middle ear, which were so difficult to deal with, and which we did not always succeed in curing, even after the most protracted and diligent course of treatment, all originated in acute inflammation; and in a vast majority of instances, the acute trouble had had no treatment. Owing to the greater prudence on the part of patients, many more of these cases now came under treatment in the acute stage than formerly, and he failed to remember a single instance where an acute inflammation of the middle ear had been treated, from the first, according to scientific methods, as laid down in the books, that had resulted in chronic inflammation of the middle ear. He thought the general experience of aural surgeons would bear him out in this statement. There was no disease more amenable to proper treatment than acute middle-ear inflammation. He had had no personal experience in the treatment of these cases with pulsatilla, or sulphide of calcium. He wished to say, however, that he knew patients recovered with a useful organ under the old method of treatment, and that, in many cases, without treatment, the acute inflammation was followed by chronic inflammation.

Dr. SEXTON, in closing the discussion, replied first to the inquiry of Dr. Burnett, respecting the use of sulphide of calcium. Of course, age and habit did make a difference, but he had seen no case in which he had not felt justified in giving it. He thought, that since otologists had taught that the drum membrane must be punctured, and the mastoid perforated, practitioners had got into the habit of operating too often. He did not say he would never use these measures, but he did say that he had not found occasion to do so; and he did not believe that he would permit patients to suffer unnecessary pain. He was surprised at his colleague's statement, that the remedies recommended were homœopathic. Certainly all these remedies were used by other members of our profession, and in varying doses. As regards patients who had been treated with sulphide of calcium going to other practitioners for relief, he did not think that was a proper subject for discussion.

## CORRESPONDENCE.

### LOSS OF HEARING DUE TO PURPURIC EXTRAVASATION.

*To the Editor of the Medical News :*

SIR: Will you kindly give me space to report in brief a case of some interest and extreme rarity? I was consulted on October 21, by Mr. T. M. C., of Laurenceberg, Ky., who reported that on the morning of the 14th he awoke and found that he could not hear any sound on the right side. The condition was accompanied by no dizziness, or pain, or other symptom. The tuning-fork being placed on the head or on the teeth, the sound was not conveyed to the affected ear, as is the case in conditions in which there is trouble of the sound-conducting apparatus, and to an ocular inspection there appeared to be no deviation from the condition of health. By the aid of these facts we were enabled, whatever be its nature, to locate the disease in the course of the auditory nerve, either before or after its entrance in the cochlea. In our attempts to discover an assignable cause, or determine any possible constitutional condition, we found that the patient was subject to attacks of purpura, and that he had had an eruption about the time when he noticed the loss of hearing.

This gave us a clue as to what the probable etiology was, and upon the supposition that there was a hæmorrhagic extravasation in the cochlea, or about the auditory nerve, the prognosis was rendered favorable. Without any other treatment than an active saline cathartic, his hearing began to improve on the ninth day from that on which he lost it, and on the twelfth day it was as perfect as it had ever been.

I notice this case because it is one of extreme interest, and because a report of a similar case has never come within my observation.

I am, sir, yours truly,

A. E. PRINCE, M.D.

JACKSONVILLE, Ill.

## NEWS ITEMS.

### CINCINNATI.

*(From our Special Correspondent.)*

**SMALL-POX.**—Vaccination has never been so generally practised as during the past few months, since the appearance of variola in our midst. Cases of small-pox have appeared in all parts of the city, but most numerous in the German quarters, where considerable opposition to vaccination is encountered. The most discouraging feature of this ignorant opposition, is that a few so-called physicians are found to encourage it. Nearly three hundred cases have been reported thus far. The law requiring the physician in attendance to give notice thereof to the board of health is very generally and promptly complied with. For neglecting so to do, one prominent physician was recently arrested and fined.

**CLINICAL FACILITIES.**—As in other affairs, so also in medical education, competition results in benefit to the public. In addition to utilizing the vast amount of material at the city hospital—where all the colleges are represented—the schools all have their own free dispensaries, and one of them a hospital of its own, where clinical lectures are delivered by the faculty. The schools here pride themselves upon their facilities for clinical instruction. In addition to all these features, the Medical College of Ohio has established a lying-in ward in the college building. From this ward two women were taken into the amphitheatre a few weeks ago, and delivered by the professor of obstetrics in the presence of over three hundred students. These two cases happened to occur on the same day, and their peculiarities (one requiring delivery by forceps, the other being a case of prolapse of the funis), rendered that day's clinic a memorable one to the students present.

### PITTSBURG.

*(From our Special Correspondent.)*

**SMALL-POX.**—Owing to the laxness which characterizes the enforcement of the law compelling vaccination—a very efficient law, by the way, which has not in a single instance been vindicated by a prosecution for non-observance of its requirements—we are in the midst of a local epidemic of small-pox, with the Municipal Hospital (for small-pox patients only) filled to repletion, and eighteen to twenty new cases reported daily, besides other cases of varioloid secretly cared for by friends, and not reported to, or sought out by, the health authorities.

### CANADA.

*(From our Special Correspondent.)*

**THE HAYVERN MURDER CASE** has excited our local alienists, and caused a good deal of discussion in the medical journals. Hayvern, a convict, stabbed a fel-

low-prisoner, against whom he had a grudge. The defence raised the plea of insanity, though there were no positive signs of mental disturbance either at the time or subsequently. It is interesting to note, as showing to what lengths some mad-doctors will go, that the principal symptoms relied upon by the defence were, a low temperature, some cutaneous anæsthesia, and sleeplessness. In spite of the strenuous efforts on the part of the Irish Catholics to obtain a reprieve, the law took its course, and the man was executed.

**THE NEW CITY HOSPITAL**, Hamilton, Ont., is rapidly approaching completion. It consists of two pavilions, with a central administration building, and will accommodate about one hundred patients.

**TORONTO GENERAL HOSPITAL.**—Under the able management of Dr. O'Reilly, the Toronto General Hospital has become, in many respects, a model one. Certainly in the matter of Xmas decorations it is unrivalled by any institution which we have visited either in this country or in England.

**BUREAU OF VITAL STATISTICS.**—A deputation, headed by Dr. Fenwick, President of the Canada Medical Association, recently waited on the Dominion Premier to urge the government to the establishment of a Bureau of Vital Statistics.

**PUBLIC HEALTH.**—Typhoid fever of a mild type still prevails in the cities and towns. Diphtheria is very prevalent in some of the country districts.

#### LONDON.

(From our Special Correspondent.)

THE question that is exciting most interest in professional circles in this country at the present time is that of vivisection. Those of your readers who attended the International Medical Congress will remember what a large share of attention this subject then received and what a strong expression of feeling was elicited on it at the closing general meeting. The aggressive action of a Society for the Protection of Animals from Vivisection has again brought the matter to the front. Perhaps it may be well to put your readers in possession of the history of this question in its legal aspect.

The first attempt to fetter physiologists and pathologists in their vivisectional investigations was made by the Society for the Prevention of Cruelty to Animals, who prosecuted some members of the British Medical Association for conducting experiments at the meeting of that Association, in Norwich, in 1874. The experiments were designed to illustrate the action of absinthe. The prosecution broke down; but this public action gave considerable stimulus to the agitation then rising against vivisection, and in 1875 a Royal Commission was appointed to inquire into the subject. In 1876 "An Act to Amend the Laws Relating to Cruelty of Animals" was introduced into the House of Commons, and after some slight but important amendments was passed through both houses, received the Royal assent, and became the law. The provisions of this Act are in the main these: That no experiment calculated to give pain, or inflict a serious injury, may be performed on any living vertebrate animal, except by a person holding a license from the Home Secretary, and in a licensed place. An anæsthetic must be employed during the whole duration of the experiment, and the animal must be killed before the effects of the anæsthetic have passed off. Should it be essential to the experiment in question that anæsthetics be not used, or that the animal should be allowed to recover from their effects, then a separate and special certificate for this purpose must be obtained. The dog, cat, horse, ass, and mule are specially exempted from vivisectional experiments, unless it is shown that the object of any experiment will be

frustrated unless performed on them. The applications for licenses and certificates have to be signed by a president of one of the medical corporations and a professor in medicine, physiology, etc., in some British University.

At the time this Act was passed no decided and united opposition to the whole Act was offered by the medical profession. It is now clear that such would have been the proper course to pursue, and that it would have been far better than any attempts to amend the Act in a manner favorable to experiments. Evidently the effect of this Act depended entirely upon the manner in which it was to be worked, and although the then Secretary of State was free with his protestations that it was not intended by to throw difficulties in the way of scientific research, it has in practice been so carried out that that has been its sole result. Licenses have been refused and granted only so tardily that the opportunity for carrying out the desired investigations have been lost; special certificates have been refused, and in general the restrictions and annoyances of the law have proved so great that nearly all scientific research through vivisection has been stopped throughout the country. Such men as Lister, Ringer, Ferrier, and Fraser have in this way been prevented from continuing their important investigations in this country.

The intensity of the opposition to this form of scientific research has been well illustrated this week. During the meetings of the Congress the function of the cerebral cortex was discussed in the physiological section, and Prof. Goltz described some experiments on dogs, from which he deduced that the cortex acted as a whole. Dr. Ferrier joined in the discussion and detailed another series of experiments performed on monkeys, which showed that different parts of the cortex cerebri had different junctions. Subsequently about one hundred physiologists met at King's College Laboratory and inspected a dog of Goltz's and two monkeys, on whom Dr. Yeo had operated many months before, one of which was deaf and the other partly paralyzed on one side. Dr. Ferrier spoke and pointed out how the condition of these monkeys supported his views. A summons was taken out against him for this, and counsel attempted to prove that because Dr. Ferrier had examined these monkeys and compared them together, he had conducted an experiment with them which he was not entitled to do without a license, and that he had been a party to keeping the animal alive after the anæsthesia had passed off. The magistrate quickly dismissed the summons. Evidently the case for the prosecution is absurd in the extreme, but its importance lies in the clear indication it gives of the way in which physiologists are hampered in their attempts to unravel the mysteries of life. It is hoped that some action may be taken to induce the Home Secretary to carry out the Act in a more liberal spirit, and not to alter it in some of its details. It is to be hoped that in the United States science will be allowed to work untrammelled by such restrictions; but should occasion arise, never give any quarter to antivivisection agitation, or consent to be burdened in any restrictive act.

**BELL'S INDUCTION BALANCE AND THE DETECTION OF BULLETS.**—At the Hospital of the University of Pennsylvania, on Dec. 21, Prof. Agnew gave Mr. Gleason, of Boston, an opportunity to demonstrate the operation of Bell's Induction Balance (see p. 46) upon patients, in whom bullets had been imbedded for years. The apparatus was the same as was used in the case of President Garfield, with some added improvements. The experiment was conducted before the medical class, and in the presence of a number of interested medical men. In one case the bullet had been received nineteen years

ago, and was supposed to be lodged somewhere in the arm. After explaining the *modus operandi* of the apparatus, a careful search was made over the patient's whole arm and shoulder, but entirely without success. Several times Mr. Gleason exclaimed, "There, there it is!" but after all, had to give it up.

The second patient was a negro, who had been shot in the left buttoch. In his case also, the apparatus failed to give any information. It seemed to show something after Drs. Agnew and John Ashhurst, Jr., had found a spot, when they felt with their fingers what they thought might be an encysted ball; but even then the coincidence was too doubtful and inconsistent to be of any value. Besides the disks, the insulated needle was used, thrust deep down to where Dr. Agnew thought he felt the ball, but even this brought no response.

The experiment proved of no use as an aid to determining the location of the missiles in these two cases; though it was easy to hear the modification of tone in the telephone when the disks were passed over Mr. Gleason's cheek, while he held a bullet in his mouth, or when the needle was thrust against a bullet buried in a piece of raw beef. In a case under the care of Dr. Hamilton, the apparatus detected a ball in the anterior wall of the chest, but that was very close to the surface.

After the conclusion of the experiments, Dr. Agnew made an exploratory incision back of the trochanter major, which disclosed that the bullet was not there.

**CAUSE OF THE IMPURE WATER IN BOSTON.**—Prof. Ira Remsen, according to the *Boston Medical and Surgical Journal*, December 1, has found on the screen at the effluent gate of Farm Pond, one of the water suppliers of Boston, moss-like matter having the same peculiar nauseous smell as the water in Boston, and which, on investigation, proved to be a fresh-water sponge, the *spongilla fluvialis*. It is probable that this decaying substance is the principal cause of the trouble.

**THE BOSTON MEDICAL LIBRARY ASSOCIATION** has issued an appeal for further subscriptions, being desirous of raising fifteen thousand dollars for the purpose of cancelling the entire debt, making some pressing and long-neglected repairs, and having a small fund for binding and for buying new books as soon as issued. The appeal is signed by Dr. Oliver Wendell Holmes and others, and will doubtless receive a liberal response from the citizens of Boston, who are well known for the liberal manner in which they foster literary and scientific objects.

**NEW YORK STATE BOARD OF HEALTH.**—The regular quarterly meeting of the New York State Health Board was recently held at Albany. The means for preventing poisonous adulterations of confectionery were discussed. A committee was appointed to represent the Board at the meeting of the Public Health Association. Various plans, having for their object the supply of pure vaccine virus, were discussed. The committee on the Hunter's Point odors reported that the great majority of the manufacturers have taken measures to abate the nuisances, in accordance with the Governor's proclamation, and that the effluvia are by no means so offensive as they have hitherto been. Measures will be promptly taken to close a few refineries, which are still the source of harmful emanations.

**IOWA STATE MEDICAL SOCIETY.**—The thirtieth annual meeting of this Society will be held at Des Moines on January 25, at 10 A. M., and will continue three days. The annual address will be delivered by T. J. Caldwell, M.D., President of the Society. A large number of papers have been promised for the meeting.

**POST-GRADUATE INSTRUCTION IN PHILADELPHIA.**—At the University of Pennsylvania there will be given, during the spring of 1882, a course of instruction by clinical methods, intended for practitioners and recent graduates. The plan includes teaching upon general medicine, nervous diseases, otology, dermatology, ophthalmoscopy, gynecology, operative surgery, and venereal diseases, by Profs. Pepper, Wood, Strawbridge, and Duhring, and Drs. Bruen, Risley, Baer, and White. The object of this course will be to supplement the regular instruction given during the winter months, and, more especially, to afford physicians desiring to extend their acquaintance with special branches, an opportunity of doing so in a most practical manner, and at a season when they can, perhaps, best spare the time.

As there has been abundant evidence of the need and desire for such instruction among the profession in all parts of the country, it is hoped that the general effort which is being made in this direction, not only here, but in several parts of the country, may deserve and meet with success.

**THE MEDICAL SOCIETY OF VIRGINIA** held its twelfth annual session at Old Point Comfort, Va., on October 10th and 11th. The following officers were elected for the ensuing year: *President*, Dr. G. Wm. Semple, of Hampton; *Vice-Presidents*, Drs. W. L. Robinson, of Danville; W. D. Cooper, of Morrisville; J. S. Apperson, of Town House; Wm. B. Gray, of Richmond; T. James Taylor, of Walton, and S. B. Morrison, of Brownsburg; *Recording Secretary and Treasurer*, Dr. Landon B. Edwards, of Richmond.

The next meeting of the Society will be held at Fauquier White Sulphur Springs, Va.

**NEXT INTERNATIONAL CONGRESS.**—A meeting of 250 physicians was held at Copenhagen on Nov. 28, at which a resolution was adopted approving the proposal to hold the next International Medical Congress, in 1884, at Copenhagen, and proffering a cordial welcome by the Danish medical profession to their brethren from foreign countries.

**THE UNITED STATES PHARMACOPOEIA.**—The revision of the *Pharmacopœia*, we are informed, is nearly completed. The work will make a duodecimo volume of from 400 to 450 pages. The mode of issuing it must be very soon considered and decided. The copyright will be disposed of, no doubt, in accordance with the instructions, on the best terms obtainable. The manner of inviting proposals for the publication of the work has not yet been determined. It is probable, however, that those who think of competing for the copyright may obtain the information desired by applying to the chairman of the "Committee of Revision," Mr. Charles Rice, Bellevue Hospital, New York.

**MAURY COUNTY MEDICAL SOCIETY.**—This society has recently organized at Columbia, Tenn., with a large membership, by the election of the following officers: *President*, Dr. J. H. Wilkes; *Vice-President*, Dr. Robert Pillow; *Secretary*, Dr. John Bowen; *Treasurer*, Dr. J. E. Dixon; *Censors*, Dr. Wm. B. Harrison, J. Spencer Hill, and C. W. Winn.

**FEMALE MEDICAL STUDENTS IN PARIS.**—Great contention prevails among the students in Paris at the decree of the Minister of the Interior, which, it is said, will shortly be published, according to lady medical students the right to compete for the House Surgeonships, hitherto denied to them. The agitation seems to be principally on the ground that the men can no longer have the house to themselves, but will be restrained by the presence of ladies.



**SMALL-POX.**—Information received from various parts of the country indicate the wide-spread and rapidly increasing prevalence of small-pox. In the State of Michigan we learn that it is reported at Bay City, Detroit, Grand Rapids, Kalamazoo, South Haven, and Union City. The one new case at Grand Rapids was believed to have been brought from North Carolina. The case at Union City was brought from Cincinnati. At Kalamazoo the disease was probably contracted by sorting paper-rags. At all of the six localities from which small-pox is reported, it is believed to be under the control of the local health authorities.

**DEODORIZING IODOFORM.**—M. Catillon, in the *Gazette Hebdomadaire de Méd. et de Chir.*, Nov. 4, 1881, describes a successful mode of removing the repulsive odor of iodoform. It suffices to add to the iodoform, in a bottle in which it is preserved, some fragment of Tonquin bean. The odor then becomes no longer recognizable, and recalls that of bitter almonds. It lasts for many days, even when the iodoform is withdrawn from the bottle and exposed to the open air.

**RUPTURE OF THE BLADDER.**—The *Lancet* for November 12, 1881, contains an interesting article, mainly historical, on the subject of rupture of the bladder.

Among the predisposing causes of this injury alcohol is mentioned as producing at the same time a rapid secretion of urine and a condition of diminished sensibility of the mucous membrane, both of which tend to produce a condition of distention without which rupture is impossible. It is also shown that the distended bladder may be ruptured through violent contractions of the abdominal muscles.

**LITERARY NOTES.**—*Vratchebrinya Vedomosti*, a Russian medical journal, publishes a translation of the able address of Dr. Billings, before the late International Medical Congress.

It is stated that the Transactions of the late International Medical Congress, in four royal 8vo volumes, of 600 pages each, are ready for delivery to members. Another proof, if one were wanting, of the ability and unceasing energy of the Hon. Secretary-General, Sir William MacCormac. Members desirous of obtaining their copies should apply immediately to Mr. Kolckmann, No. 2 Langham Place, London, W., enclosing a remittance of five shillings to cover postage. Copies may be obtained by non-members at £2-2s., or separate volumes at 10s. 6d. each. Volume I. contains List of Members, General Meetings, General Addresses, Museum, Anatomy, Physiology, Pathology, Materia Medica, and Pharmacology. Vol. II., Medicine, Military Surgery, and Medicine Surgery. Vol. III., Ophthalmology, Mental Diseases, Diseases of the Skin, Diseases of the Throat, Diseases of the Ear, Diseases of the Teeth. Vol. IV., Diseases of Children, Obstetric Medicine and Surgery, State Medicine. These volumes are in paper covers, but may also be had in fine bindings at an additional cost, ranging from £1 10s. per volume for best polished morocco, with bronze Congress medal in the front cover, to half calf at 4s. 6d.

Gray's *Anatomy* has been translated into the Chinese language, and published in six volumes at Foochow.

Fordyce Barker's *Puerperal Diseases*, and T. A. Emmett's work on *Gynecology* have been translated into the Dutch, and Dr. Costa's *Diagnosis* into the German language.

**APPOINTMENTS.**—The Board of Trustees of the University of Louisville, have appointed Dr. Theophilus Parvin, of Indianapolis, to the chair of Obstetrics and Diseases of Women, made vacant by the death of Dr. Crowe. The university may be congratulated on the

addition to its faculty of so distinguished a gynecologist, and so eminent a teacher as Prof. Parvin.

The Faculty of the College of Physicians and Surgeons, of Baltimore, Md., have called Dr. Richard Gundry, to occupy the chair of Materia Medica, Therapeutics, and Mental Diseases.

Dr. Lewis S. McMurtry, of Danville, Ky., has accepted the chair of Anatomy in the Kentucky School of Medicine, in place of Dr. Cook, who has removed to San Francisco, Cal. Dr. McMurtry will remove to Louisville.

Dr. J. Forsyth Meigs has resigned the position of Visiting Physician to the Pennsylvania Hospital, and Dr. Arthur V. Meigs has been elected to fill the vacancy.

Dr. Louis Elsberg, of New York, has been elected Professor of Laryngology and Diseases of the Throat in Dartmouth Medical College, and he has resigned the clinical lectureship on the same subjects, which he held in the University of the City of New York.

**PERSONALS.**—The Royal Society of London have conferred the Copley medal, the highest distinction in their power, on M. Würtz, the eminent French chemist, for his valuable contribution to science.

M. Pasteur has been elected to the seat in the French Academy made vacant by the death of M. Littré.

It is proposed to place a marble bust of Mr. Erichson in University College, London, as a mark of respect for his long connection with, and great services to, the School of Medicine of that College.

Virchow has been made an honorary member of the Universities of Bologna and Kasan, as well as of the College of Physicians in Vienna and the German Society for Public Hygiene in Berlin. Dr. B. F. Leonard has been appointed Professor of Physiology; Dr. W. R. Monroe, Professor of Materia Medica and Therapeutics; Dr. H. L. Byrd, Professor of Obstetrics and Diseases of Women and Children; Dr. H. Froehling, Professor of Chemistry, Toxicology, and Medical Jurisprudence in the Baltimore Medical College.

Dr. J. R. Chadwick has been appointed Instructor in Diseases of Women, and Dr. E. H. Bradford Special Instructor in Orthopaedics in the Harvard School.

CONSIDERABLE currency has been given by the medical and lay papers to the story that immediately after the assassination of President Garfield Professor Gross volunteered his professional services at the White House, and that they were declined. Even at this late date we find the report still obtaining currency through the press, and we deem it due to the distinguished surgeon in question to say that we have the best authority for stating that the story is utterly without foundation.

**DIED,** at Hastings-on-the-Hudson, on January 4, JOHN W. DRAPER, M.D. Dr. Draper was born at St. Helena, near Liverpool, England, on May 5, 1811. He received his early education in England, and came to this country in 1833, where he continued his chemical and medical studies, commenced at the University of London, in the medical department of the University of Pennsylvania, where he took the degree of M.D. in 1836. Soon after graduation he was appointed Professor of Chemistry, Natural Philosophy, and Physiology in the Hampden-Sidney College, Virginia. In 1839 he was called to the chair of Chemistry and Natural History in the University of New York, and in 1841 he was appointed Professor of Chemistry in the University Medical College, where he was long President of both the scientific and medical departments.

Dr. Draper's numerous and valuable experimental researches were published in the *American Journal of the Medical Sciences*, *London and Edinburgh Philosophical Journal*, and the *American Journal of Science and Arts*. He was likewise the author of many literary

works and reviews: *A Treatise on the Forces which Produce the Organization of Plants* (1844); *A Text-Book on Chemistry* (1846); *A Text-Book on Natural Philosophy* (1847); and one on *Human Physiology* (1856), which passed through numerous editions. His *History of the Intellectual Development of Europe* appeared in 1852, and was almost immediately afterwards republished in England, and translated into French, German, Italian, Polish, and Russian, and has passed through many editions in this country. In some respects, his most important work was the *Conflict between Science and Religion*, which attracted great attention, and was translated into all the principal languages. He was also the author of *A History of the American Civil War*, and *Thoughts on the Future Civil Policy of America*.

In 1874, the American Academy of Science conferred the Rumford medal, the highest distinction in their gift, on Prof. Draper, for his researches on *Radiant Matter*.

Dr. Draper was one of the most eminent scientists and philosophical thinkers our country has produced, and history will probably accord to him high and enduring fame.

Dr. Draper had two sons, both distinguished in science—Prof. Henry Draper, the eminent spectroscopist, and Prof. Daniel Draper, who is well known as a meteorologist.

—, on November 25, of WILHELM BUSCH, in the fifty-fifth year of his age. Prof. Busch was a student and assistant of Johannes Müller, and in 1848 took part in the Schleswig-Holstein war, where his aptitude for surgery was developed under the guidance of Langenbeck. In 1855 he was elected Professor of Surgery in the University of Bonn, and was Surgeon-General of the Prussian army in 1866–70. His earliest works related to comparative anatomy, and the later to surgery, in which his writings on the subjects of the influence of the mechanism in inflammation and dislocation, the mechanism of strangulated hernia, and gun-shot wounds are the best known. Prof. Busch recently received the great Cross of the House of Hohenzollern, with an autograph letter from the Emperor, in gratitude for a successful operation performed on the Empress.

The death of Dr. NIKOLAUS PIROGOFF is announced by telegram from St. Petersburg. He was Professor of Surgery to the Medico-Chirurgical Academy in St. Petersburg, and a member of the consulting staff of several hospitals in that city. In 1840, he brought out a valuable treatise on the division of the tendo-Achillis in orthopædic surgery. He also wrote on cholera, on the surgery of the arterial trunks and of fasciæ, and on the medical aspects of the Caucasus, and on topographical anatomy. His work on this last subject forms a fine atlas of anatomy, as illustrated by frozen sections. It is, however, with military surgery that his name will ever be most closely associated. He is the medical historian of the Crimean and Circassian campaigns; and also wrote a report on the permanent and improvised military hospitals in Germany and Alsace-Lorraine during the war of 1870. The late Professor is probably best known to Englishmen in association with one of the numerous methods of partial amputation of the foot. —*British Med. Journ.*, Dec. 10, 1881.

## NOTES AND QUERIES.

### PENNSYLVANIA RAILROAD COMPANY'S INSTRUCTIONS FOR EXAMINATION OF EMPLOYEES AS TO VISION, COLOR-BLINDNESS, AND HEARING.

MR. FRANK THOMSON, General Manager of the Pennsylvania Railroad Company, has issued the following instructions, under which examinations will be made on each division of the road, as soon as practicable, of all employes in positions where they are re-

quired to use or be governed by signals. Persons will not be appointed to such positions until they have satisfactorily passed similar examinations. Employes failing to come up to the required standard, will have the privilege of a professional examination by experts designated by the General Manager.

**Instructions for Examination as to Vision, Color-Blindness, and Hearing.**—The examination will be made by, or under the direction of the Division Superintendent, and will be as to vision, color sense, and hearing, and the following apparatus will be used?

1. A card or sheet of large letters for testing distant sight.
2. A book or card of print for testing sight at a short distance.
3. An adjustable frame for supporting the print to be read, with a graduated rod attached for measuring the distance from the eye while reading.
4. A spectacle frame for obstructing the vision of either eye while testing the other.
5. An assortment of colored yarns for testing the sense of color.
6. A watch with a loud tick for testing the hearing.
7. A book or set of blanks for recording the observations.
8. A copy of an approved work on "Color-Blindness."

**Acuteness of Vision.**—For distant vision, place the test card in a good light twenty feet distant, and ascertain for each eye separately, the smallest letters that can be read distinctly, and record the same by the number of that series on the card.

**Range of Vision.**—For near vision ascertain the least number of inches at which type D=0.5 or 1½, can be read with each eye and record the result.

**Field of Vision.**—Let the examiner stand in front of the examined at a distance of three feet, and directing the examined to fix his eyes on the right eye of the examiner and keep them so fixed, let the examiner extend his arms laterally, and opening and shutting his hands, let him by questions satisfy himself that his hands are seen by the examined, without changing the direction of the eyes; recording the result as good, or defective, as the case may be.

**Color Sense.**—Three test-skeins—A, light green; B, rose; C, red;—will be used with the colored yarns attached to the stick; of the latter there are forty tints, numbered from 1 to 40, and arranged in three sets—a, b, and c—of which the odd numbers correspond to the colors of the test-skeins, whilst the even numbers are different or "confusion colors."

The first set is to test for color-blindness; the second to determine whether it be red or green blindness, and the third to confirm the opinion formed from the first or second test.

Place the test-skein A at a distance of not less than three feet, and without naming the color, direct the person examined to name the color, and to select from the first twenty tints, or set (a) of the yarns on the stick, ten tints of the same color as skein A, stating that they do not match, but are different shades of the same color. Record the number of the tints so selected. Do the same with skeins B and C, using for B the tints from 21 to 30, and for C the tints from 31 to 40. If the odd numbers are selected readily, the examination may be gone over very quickly.

When color-blindness is detected, any one of the even numbers or "confusion colors" may be used as a test-skein, and the man may be directed to select similar tints, when he will most probably choose odd numbers, which should be recorded, stating the number on the stick of the confusion color used for a test, and then giving the numbers chosen to match it.

Then a soiled white flag should be shown, and the man be directed to select tints to match it, which should be recorded; next a green, and finally a red flag.

All of the particulars are to be recorded as the examination proceeds, not leaving it to memory. Use the numbers in recording. The letters indicating the set need not be used. Note whether the selection is prompt or hesitating by a distinct mark after the proper word on the blank form. When deficient color sense is discovered, and variations in the mode of testing are made by the examiner or examined, they should be noted under remarks, or on a separate sheet to be referred to, if the blank has not room enough.

**Hearing.**—Note the number of feet or inches distant from each ear at which a watch, having a loud tick, is heard distinctly, using a watch without tick, or a stop watch, to detect any supposed deception; and the number of feet at which ordinary conversation is heard.

**Explanations.**—The test-card contains letters, numbered from 20 (xx) or D=6, to 200 (cc) or D=60. Those measuring three-eighths of an inch, and numbered 20 (xx) or D=6, are such as a good eye of ordinary power sees distinctly twenty feet or six metres distant. If a man sees distinctly only those marked C (or 100), his acuteness of vision, V, is equal to  $\frac{20}{100}$  or  $\frac{1}{5}$ . If he sees XX (or 20), then V is equal to  $\frac{20}{20}$ , or 1, and his sight is up to full standard. This mode of statement indicates the relative value of the sight examined, and should be used in the records. If one eye is  $\frac{2}{3}$ , or 1, and the other not less than  $\frac{2}{3}$ , or  $\frac{1}{2\frac{1}{2}}$ , with or without glasses, the sight may be considered satisfactory.

The power of discerning small objects at the reading distance is tested by the small print, and good sight may be assumed if one eye can see at twenty inches the matter marked  $1\frac{1}{2}$  or  $D=0.5$ , whilst the other distinguishes not less than  $\frac{4}{5}$  or  $D=1.5$ . The small print should then be brought to the point of nearest vision for each eye, and that point mentioned in inches. A good eye should be able to read No.  $1\frac{1}{2}$  at twenty inches, and have a range of vision up to ten inches.

The color test will indicate whether the man is deficient in color sense. The colors are arranged in three sets, one of 20 and two of 10 each—the odd numbers are the colors similar to the test-skins, and the even numbers are the "confusion colors," or those which the color-blind will be likely to select to match the sample skins or colors shown him. The first 20 (a), numbered from 1 to 20, have green tints for the odd numbers or test-colors. In the second (b), 21 to 30, the test-colors are rose or purple, a combination of red and blue; and the third (c), 31 to 40, they are red. Ordinarily the test will be with each set separately, but the whole 40 may be employed on any test-skin. Anything but green matched with green indicates a defect in the color sense for which use set (a).

The test with the second set indicates whether red or green blindness exists. The odd numbers from 21 to 30 are purple. If either of these is matched with test-skin B, nothing is indicated, as they must appear alike to a color-blind person; but if blue is chosen, red blindness is indicated, and if green, then green blindness is established.

The third set (c) is scarcely needed, but may be used in confirmation of, or in connection with, the last, as to red or green defect.

When the numbers of the tints selected are recorded in the proper blank, color-blindness will be indicated in those instances where even numbers appear, and suspicions will arise where numbers beyond 20 are used with test-skin A, and under 21 or beyond 30 with B, and below 31, with C.

Further tests should be made of those found to be color-blind with the usual signal flags, requesting them to name each color shown singly, and to match the colors of them from the tints on the stick, and with colored lamps; and finally to state what they understand them to mean as signals.

It will be well not to dwell on the examination of a man found to be defective in color sense or in vision, but to pass over each examination with the same general care, and afterwards send for those giving indications of defects, to come in singly for fuller examination. The examination should be private as far as practicable, especially excluding persons who are to be subsequently examined.

Inability to name color accurately, or to distinguish nicely as to difference in tint, is not to be taken as an evidence of color-blindness.

In testing as to hearing, if a person who has a good ear hears the watch used at five feet distant, and the person examined hears it only at one foot, his hearing would be 1-5, and may be recorded in fractions. Conversation in an ordinary tone should be heard at ten feet.

It should be understood that all employes examined, failing to come up to the requirements of the above standard, shall be accorded the benefit of a professional examination. When acuteness of vision is below the standard adopted, it may be possible to restore full vision by proper glasses, when it is due to optical defects, known as near-sight, far-sight, or astigmatism, or by other medical or surgical treatment, and useful men may then be retained in the company's service.

#### TO THE EDITOR OF THE MEDICAL NEWS.

SIR:—I have read with interest the editorial on "Free-trade in Medicine," in your issue of January 7, and was glad to learn of the pleasant way in which an English contemporary speaks of our native medical literature. I cordially agree with your statement that direct control of medical education by political boards is at least at present not desirable, but that "flagrant irregularities" should be corrected. I am rather surprised, however, at your conclusion that our "free development and successful progress" are owing "to our system of free-trade in medicine." With the highest admiration for the achievements of American physicians, and for their justly esteemed contributions to medical literature, I am yet totally unable to see in what manner the so-called "free-trade" which exists here has stimulated their labors or improved the character of their productions, and, therefore, how your conclusion is justified by the premises.

It is true that we have been successful, and, as a profession, have much to be proud of, but it has been in spite of many serious hindrances and mortifying obstructions, due, it appears to me, largely, if not altogether, to this very lack of restriction which, as we all know only too well, has permitted thousands of incompetent men to enroll themselves in our ranks, and to compel us to bear the burden and the shame of their ignorance. This, to my mind, seems

the direct outcome of our "free-trade," which to a greater or less extent is responsible for the absence of preliminary training, the short terms of study, the easily gained diplomas—in brief, the defective medical education—which, I am glad to say, is rapidly ceasing to be a source of discredit and of opprobrium to the profession in America. Very respectfully,

J. WILLIAM WHITE.

PHILADELPHIA, Jan. 10, 1882.

[Our correspondent appears to have mistaken the purport of the editorial to which he refers, viz., the question of governmental control of medical education. We did not assume to analyze the causes of our "successful progress," but simply to call attention to a point which had been noted by an English contemporary. While we have no doubt that our medical progress has been impeded by the causes our correspondent mentions, that was not a point under consideration. With our political system, we believe it is unquestionably better for medical education not to be made the subject of political control, and in the editorial referred to, while we expressed distinct approval of "appropriate legislation," we equally distinctly expressed disapproval of paternal legislation, which, history teaches, even under the best civil service, ultimately hinders the advance of knowledge.—ED.]

#### TRANSACTIONS OF THE PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THE Pathological Society of Philadelphia desires to sell the surplus volumes of its transactions, and offers them at sixty cents per volume, postage free. Copies may be obtained of the Treasurer, Dr. French, 1423 Walnut Street, Philadelphia.

#### OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT, U. S. ARMY, FROM DECEMBER 2, 1881, TO JANUARY 3, 1882.

MURRAY, ROBERT, *Colonel and Surgeon, Medical Director, Military Division of the Missouri*.—The leave of absence granted him in S. O. 100, October 5, 1881, Military Division of the Missouri, is extended two months.—S. O. 272, A. G. O., December 2, 1881.

SUMMERS, JOHN E., *Lieutenant-Colonel and Surgeon, Medical Director, Department of the Platte*.—The leave of absence granted him in Par. 6, S. O. 123, Department of the Platte, December 1, 1881, is extended one month.—S. O. 135, Military Division of the Missouri, December 28, 1881.

ALEXANDER, R. H., *Major and Surgeon*.—The leave of absence granted him in S. O. 215, September 19, 1881, from A. G. O., is extended one month.—S. O. 285, A. G. O., December 17, 1881.

McCLELLAN, ELV, *Major and Surgeon*.—Relieved from duty at Fort McHenry, Md., to proceed to Fort Trumbull, Conn., and relieve Assistant Surgeon, W. H. King.—S. O. 224, Department of the East, December 15, 1881.

KING, W. H., *Captain and Assistant Surgeon*.—When relieved by Surgeon McClelland, to repair to Fort McHenry, Md., and report for duty at that post.—S. O. 224 c. s., Department of the East.

HAVARD, V., *Captain and Assistant Surgeon*.—Now en route from Fort Davis to San Antonio, Texas, assigned to temporary duty at Headquarters Department of Texas, and to report to the Medical Director for instructions.—S. O. 154, Department of Texas, December 12, 1881.

PERLEY, H. O., *Captain and Assistant Surgeon*.—Having reported in person at these headquarters, will report to the commanding officer, Fort Columbus, N. Y. H., for duty, as assistant to the post surgeon, and attending surgeon at these headquarters.—S. O. 224 c. s., Department of the East.

RAYMOND, HENRY I., *First Lieutenant and Assistant Surgeon*.—Relieved, temporarily, from duty at Alcatraz Island, Cal., and to report to the commanding officer of the Presidio of San Francisco for duty at that post.—S. O. 214, Military Division of the Pacific and Department of California, December 9, 1881.

MADDOX, THOMAS J. C., *First Lieutenant and Assistant Surgeon*.—Having completed the duties assigned him under S. O. 248, November 3, 1881, from A. G. O., will report in person to the Surgeon-General, U. S. Army.—S. O. 238, A. G. O., December 15, 1881.

THE MEDICAL NEWS will be pleased to receive early intelligence of local events of general medical interest, or which it is desirable to bring to the notice of the profession.

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the "News" should be addressed to No. 1004 Walnut Street, Philadelphia.